The Veterinary Record

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888.

No. 34. AUGUST 20, 1938. Vol. 50.

A Few Notes on Equine Colic*

with special reference to its treatment with ACETYLCHOLINE

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You will probably consider me very brazen literally to walk into the district of such men as Reeks and Lang and offer to speak to you on the subject of equine colic, especially when I tell you that I have, by comparison, little knowledge of my subject. I am, however, fully aware of the fact that when the History of Colics in Horses is written for the coming generation, the names of the two gentlemen mentioned will figure very largely on its pages.

When your President honoured me with an invitation to read a paper at this meeting at somewhat short notice, it was, perhaps, this very lack of knowledge that prompted me to select this subject. It is eleven years since the last edition of the late Mr. Caulton Reeks' admirable work on the Common Colics of the Horse was published and since that time, considerable advances have been made, especially in therapy, and it is to be deplored that he has not lived to offer at this time in his lucid style a new edition embodying all the new knowledge, and bringing the whole subject up to date.

The subject is a large one, embodying, as it does, gastric impaction and tympany, impaction of the large and small bowel and caecum, impaction with displacements, calculus, or a primary inflammation of the walls of the stomach and bowels without impaction.

Further, impaction can be caused either by food in the intestine or by a worm aneurysm in the anterior mesenteric artery, inhibiting a certain portion of the bowel. It is obvious that, in the time at my disposal, it is impossible more than to fringe a subject like this; I propose, therefore, to confine myself to a few aspects of the therapeutic side of the subject, and to place before you certain conclusions I have arrived at, as the outcome of my personal experience. For I realise one can never generalise on the subject of equine colic: the varying conditions that exist make it impossible to lay down hard and fast rules. Not only are conditions entirely different in grass and arable districts, but each grass and each arable district may differ as much one from the other according to soil, climate, breed of animal, and management, and this is equally true for horses working in towns. To instance this, Mr. Reeks, when discussing sub-acute impaction of the double colon, writing from an arable district, states that it is this particular form which occurs most often in practice.

When I was an assistant in the wheat growing area of North Dakota, I found the same condition was common, especially in the winter, where the horses have access to a lot of straw, but there was this exception, there was not the phlegmatic temperament of the Shire to deal with.

In my own practice, composed mostly of rich grassland, I seldom see a sub-acute impaction of the large bowel. Almost all our cases are of an acute or semi-acute nature, and in my opinion, involving the small bowel. These cases take a stormy course; they are nearly always better or dead, or nearly dead, within 24 hours—at the outside 36 hours. The highest percentage of colic cases occur with me in the spring and autumn when horses are getting a mixture of grass and dry food, and we find that grass and dry food never mix. One would imagine that grass would help the dry food through, but it only tends to make it dryer and dryer, and, in our experience, horses should either be kept on one or the other.

Conditions of recent years have undoubtedly had an influence on the incidence of colic. Hours of working are less, tractors have relieved horses of a lot of heavy haulage, but to counteract this, horsemanship has become almost a lost art, and horses do not get the care they used to do, and I doubt whether, on a percentage basis, there is much less bowel trouble than formerly.

It is, therefore, important that our methods of diagnosis and treatment should be, from time to time, reviewed.

* Presented to the Lincolnshire and District Division, N.V.M.A., at Peterborough, June 9th, 1938.

Since Reeks advocated his stimulant treatment, intestinal lavage has taken a place as a therapeutic method for both horses and cattle in this country, and several new drugs have been introduced. It is only by a pooling of experience of the value of these methods that the best results can be achieved.

I believe that the adoption of the stomach tube in horse practice by British veterinarians is one of the most outstanding advances in large animal practice since the War, and we, as a profession, owe a great debt to W. W. Lang for his energy and enthusiasm in advocating its use. Its advantages over drenching, its diagnostic value, as well as its many uses outside the realm of equine colic are too well known to be mentioned here. At the same time, I am not one of those who look upon stomach and intestinal lavage as methods to be used without due consideration of the case.

In dealing with impaction of the large bowel with its insidious onset and dull pains, I am fully in agreement that stomach lavage is a sound procedure; that the introduction of a few gallons of saline solution into the stomach is well tolerated. It can be repeated at intervals and can be combined with other means of treatment. In impaction of the small intestines, however, the introduction of large quantities of fluid into the stomach, in my experience, has not been so happy. In the first place, it often puts the animal in tremendous pain, and in the second place, I am of opinion that the extra pressure on the stomach is wrong. Frequently I have observed on the second or third visit that the introduction of oil or solution has done nothing but increase the pain, and too frequently at *post-mortem* examinations I have been mortified to find that the bulk of the medicine has remained in the stomach during the course of the case. This leads me to believe that the syphon trap formed by the duodenum as it leaves the pyloric end of the stomach which is mentioned by Fred Smith, and later by Reeks, has a very important bearing on impaction of the small bowel, and is an important factor to consider in treatment. I have formed the opinion that, except for a preliminary small dose of oil at the outset of the case, the introduction of liquids into an often already overloaded and paralysed stomach in cases of impaction of the small bowel or stomach is wrong in principle, and that what medicines are given by the mouth should be given in bolus form.

Further, it is my view that the introduction of liquids into the stomach is not such a simple matter as might be expected; I mean that the mere pumping of a few gallons of solution does not mean that it will necessarily permeate its way through and soften the obstruction as required. To illustrate my point, I cite the following cases:—

On May 22nd, 1928, I was requested to treat a chestnut Shire mare, nine years old, having been called at 7 p.m. She had been ill since 2 p.m. She had had no medicine; pulse good, eye fair, very little peristalsis. On rectal examination a few hard lumps could be felt, but not much. She was given the Reeks stimulant treatment of ammon. carb., turpentine, oil and nux vomica, with this exception, that some aloes was added and instead of bolus, the ammon. carb. was given in two quarts of water by tube and arecoline, ½ gr., was given hypodermically.

At 11 p.m. the mare was no better. I repeated the ammonia, ether and turpentine in solution; arecoline, ½ gr., was repeated. Left ether and turpentine. She was in great pain all night and was so at 11.30 next morning; her pulse was still good but not as good as on the previous night. I repeated oil, ammon. carb. and ether in one gallon of water. A large enema was given—straw chop kept breaking away, which looked quite hopeful; nothing abnormal per rectum.

At 3.30 ammon. carb. and turpentine in one gallon of water was repeated. 5 p.m.: arecoline compound P.D.; 10 p.m.: definitely worse. The mare died during the night.

On *post-mortem* examination I found the stomach enormously enlarged, and containing several gallons of clear fluid—perhaps all my medicine. About six feet from the ileo-caecal valve I found an impacted mass partially softened, but in its bulk was bean straw chop perfectly dry and absolutely untouched by the moisture. At the ileo-caecal valve there was another small mass in a similar condition.

The summing up leaves me in doubt as to whether the stomach was previously enlarged, whether the syphon trap prevented the fluid leaving the stomach properly or whether there was a partial displacement without visible inflammation. The mystery was why all this fluid did not syphon back and soften the hardened mass: the fluid was put in by syphon. This case increased the doubt which I had held for some time if fluid was always indicated, if my treatment had been given in balls without fluid, would my case have ended in recovery?

In another somewhat similar case the Reeks stimulant treatment was pushed to the extreme (except that fluid was again substituted for the balls recommended by Reeks) together with large rectal irrigations. In this case, however, there was a difference, in that, in addition, two gallons of saline were given to the mare during the treatment, and that she drank water freely on the second day, showing that in this instance, the syphon trap was not at fault, and yet on *post-mortem* examination—I copy from my notes of the case taken at the

time--"24 inches or so anterior to the ileo-caecal valve the intestinal contents were as hard and dry as ever. It appeared as if no fluid had started to penetrate it; the ileo-caecal valve appeared very constricted." I am still at a loss to know why the fluid given had not penetrated and softened the mass.

Valuable as are such hypodermic injections as eserine and arecoline, these drugs have always left something to be desired. Perhaps arecoline has had the widest popularity during the last 25 years, as it has been suggested by its advocates that as long as there is no bowel displacement it can do no harm, and if there is a displacement it hastens death, which is an advantage.

My own experience with the quick acting cathartics, especially arecoline, is that if such an agent has the desired result it is most satisfactory, but if it fails to give relief, each injection leaves the pulse weaker and the patient more depressed.

In October, 1934, Harvey wrote in the *Veterinary Record* pointing out the value of acetylcholine in equine colic, and gave several satisfactory case reports of its use. Since that time I have used it extensively with the most satisfactory results, but there appear to be few case reports published.

A full report of acetylcholine was published by Harvey but to refresh your memories I will quote that acetylcholine is an organic chemical substance normally present in the intestinal wall and perhaps in all tissues. Its history in the body closely resembles that of histamine. It seems almost certain that certain nerve fibres act only by virtue of local liberation of acetylcholine. A supply of the choline should always be available for conversion into its acetic ester acetylcholine. Trauma or other depressing influence affecting the bowels or other parts may be associated with a relative or absolute diminution in the acetylcholine contents of the bowel wall, and in such instances, relief may be obtained by administering it—still quoting from Harvey's paper. Abel puts the matter as follows:—

(1) Acetylcholine is essential for intestinal peristalsis.

(2) Factors which produce paresis or paralysis of the intestine do so by either:—

(*a*) Dimishing the intestinal content of acetylcholine;

(*b*) Increasing the threshold of the nerve impulse, thus rendering the normal quantity of acetylcholine insufficient.

(3) The administration of acetylcholine is, therefore, the correct treatment for these conditions. He further states that drugs of the nature of arecoline and eserine are unfortunately depressants to the heart as well as being motor to the bowel, and there would seem a doubt as to whether they are of any use at all in the absence of acetylcholine.

Up to the end of 1937 we have used acetylcholine on 136 horses showing definite symptoms of abdominal pain or bowel stasis, of which 21 died and 115 recovered. The results in years are as follows:—

1934: Three cases.
All recovered.
Two required two injections.
One required one injection.

1935: Thirty-one cases.
Eight deaths.
Twenty-three recovered.
Of the 23 animals that recovered,
20 received one injection.
Three received two injections.
Deaths: One calculus.
Six displacements.
One old age.

1936: Forty-one cases.
Eight deaths.
Thirty-three recovered.
Of the 33 animals that recovered,
28 received one injection.
Four received two injections.
One received in addition half a grain arecoline.
Deaths: Three displacements.
One peritonitis.
One rupture of diaphragm.
One destroyed for age.
Two hopeless, but no *post-mortem* examination.

1937: Thirty-four cases.
Five deaths.
Twenty-nine recoveries.
Of the 29 animals that recovered,
19 received one injection.
Three received two injections.
Four received two with arecoline.
One received four injections.
One received four half-grain doses of arecoline and the last combined with acetylcholine.
Deaths: Three displacements.
Two ruptures.

The last case tabulated is the only case which received a preliminary dose of arecoline without acetylcholine. It received two half-grain doses of arecoline on February 8th, two on February 9th, the last injection only being combined with acetylcholine.

It is of interest to note that out of 125 cases there was only one in which it was necessary to give four injections.

My procedure has been as follows. After making a general and rectal examination of the case a preliminary dose of linseed or mineral oil has been administered together with antispasmotics and perhaps the addition of liquid aloes. This has been combined with an enema and a hypodermic injection of acetylcholine, gr. seven-and-a-half (5 c.c.) The acetylcholine has been repeated at intervals varying from two to six hours and other treatment in the few cases necessary has been given by stimulant balls.

As my figures indicate, very few cases have required more than one or two injections, but cases which have been given several have shown no signs of depression from its use. There is little if any extra pain—sometimes slight salivation—but frequently nothing is noticed from the injection. I have never experienced severe pain after its use as recorded by Harvey (case No. 4) but in thise case he gave gr. 15. I have seldom given more than half this amount but an acute case treated by my assistant in May, 1936, received 10 c.c. and recovered from the first injection.

We have on a few occasions combined the acetylcholine with small doses of arecoline, strychnine or eserine, and in each case the results were satisfactory. I was called to one case late at night after returning from London when the owner was not satisfied with its progress. The animal had received two 5 c.c. injections of acetylcholine during the day; I administered a third injection together with half a grain of arecoline and the animal was recovered in the morning.

Although I prefer mineral oil for an old or debilitated animal I have not observed any harmful results from a preliminary dose of linseed oil or liquid aloes nor do we obtain undue purgation. At the same time I think it is within the range of possibility that, with further investigation, such medicines by the mouth might be discontinued.

I place these figures before you for what they are worth. I have no idea whether they compare favourably or otherwise with results obtained by other practitioners but as far as my own practice is concerned, I do know my own results have been more satisfactory than formerly. Whether or not it happens to be a coincidence or a long run of good fortune, the fact remains that since I started using acetylcholine I have not had the unpleasant task of conducting *post-mortem* examinations on the stomach and bowel cases referred to previously in my paper. At the *post-mortem* examinations we have attended there has always been something satisfactory and definite to account for the animal's death.

In conclusion, I should like to express my indebtedness to Mr. F. T. Harvey, of St. Columb. I also wish to thank you for the kind invitation to be here to-day: I trust my remarks may at least arouse a good discussion on this important subject "Colics of the Horse."

References

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Discussion

Major T. Hicks opened the discussion in the following terms:—

I am sure I am voicing the wish of the members present in congratulating Captain Gunning in the choice of his paper. It is a subject in which we are all interested and one which causes us considerable worry and anxiety; indeed I know of no other disease to which we are called that equals it in this respect.

A lightning prognosis is out of the question as until the animal is relieved, which is easily manifested, it is always in grave danger. I quite agree with the essayist that Mr. Caulton Reeks was primarily responsible for a more correct line of treatment. Gastric impaction and tympany cause great pain. The latter can usually be relieved by the tube and medicine—an antizymotic with ether and oil. In such cases I view ammonium carbonate with disfavour as it gives off CO_2, thus adding fuel to fire, *e.g.*, more gases, but prefer ammonium hydrate, as the hydrate takes up the CO_2 and converts it into the carbonate. With gastric impaction I still think an oleaginous purgative should be used although I usually add istin, turpentine and ether. In impaction of the large intestine and caecum I give aloes or istin in bolus, and follow up with the usual stimulating treatment as Mr. Reeks suggested. Of one thing, particularly, I am convinced and that is, it is never safe to attend any colic case without the trochar and cannula which I never hesitate to use in any case of tympany, passing it directly into the colon on the right side. Colic caused by aneurysm in the anterior mesenteric artery or a ruptured mesentery no doubt is fatal. The subacute impaction of the double colon occurs in most agricultural districts in winter time when horses are in and dry fed. The acute form, involving the small intestine, occurs as stated when horses are at grass and brought in on odd days to do a little work, fed and then turned out again to grass. On *post-mortem* examination one sees the obstruction of green grass several feet from and in the caecum and many times I have found the dry food and medicine in contact, the obstructed portion being in a chronic state of inflammation. I quite agree

that animals should be fed on either grass or dry feed—not the two together. I have used acetylcholine quite a lot and consider it a great improvement on arecoline, physostigmine, pilocarpine, etc. I think when any of the above are used one gets the better results by using them early in the case, depending on the symptoms—temperature, membranes and pulse. The two latter are invaluable in diagnosis.

The typical stoppage of the colon one often sees, with little pain, a strong slightly accelerated pulse, to begin with, and a prostrate condition—the animal hanging head down. After a dose of aloes or istin and two or three doses of stimulating treatment, resolution is helped by the administration of arecoline, which in my opinion is preferable to acetylcholine for these cases.

The arecoline should only be given in half-grain doses and repeated if necessary. I agree that arecoline affects the heart and I have had several horses that have recovered after large doses of arecoline, develop some organic heart disease at a later date. I am a great advocate of continuous hot fomentations to the abdomen and enemata.

The advantages over drenching by using the stomach tube are no doubt outstanding but I am still strongly in favour of administering balls: capsules can be filled on the spot with the drugs required; also, the stomach is often already full of liquid ingesta. The paresis of the small intestine with impaction, where it is formed by the syphon trap, is a common cause of death. On *post-mortem* examination we must have asked ourselves why the medicine was held up in the stomach and had not reached the obstruction. I consider the nux vom., ammon. carb. treatment by ball followed by acetylcholine correct in these cases.

It is said that food or ingesta passing down the nostrils is a symptom of either a ruptured oesophagus or ruptured stomach; I have seen several horses with gastric tympany emitting ingesta per nostril that have recovered; the pulse and general symptoms easily differentiate between these conditions.

One word, finally, about gastric tympany. It may be caused by wheat, barley, sugar beet pulp, etc. The stimulating treatment is quite erroneous—one should give oil, ether and turpentine to commence with, followed up by ol. creosote and ether in oil at frequent intervals. Should the horse be allowed to roll? There are many opinions about this; I consider it a mistake to allow the patient to do so, particularly in the later stages.

With reference to choking, I use arecoline and the stomach tube for these cases, but some time ago I had a case lasting four days that did not respond to this treatment. I then tried with success an old-fashioned treatment, *i.e.*, giving the animal three tablespoonfuls of warm, melted lard every two hours by simply holding the horse's head up and pouring the lard into his mouth. I have used this treatment many times since without a failure, along with the tube, arecoline, etc.

The President (Major A. N. Foster) congratulated Captain Gunning on his very able paper and thanked him for coming so far to read them such an interesting and instructive paper at such short notice and in spite of a badly injured foot.

Mr. M. R. MacFarlane thanked Captain Gunning for his paper which, he said, was particularly interesting to him as he had a considerable number of cases of colic in his practice. The practice was formerly presided over by the late Mr. Caulton Reeks and under whose guidance he had always given a large dose of turpentine and aloes in bolus form; 12 drms. of aloes had been given in some cases. They had nearly 90 per cent. of recoveries. He had found that arecoline *per os* was more valuable than when used hypodermically and that camphor in oil was a most useful stimulant.

Mr. W. W. Lang, having also expressed his appreciation of the paper, said that in any case of colic the first question was a correct diagnosis and he found the stomach tube most useful for this. He was glad to hear that the essayist carried out *post-mortem* examinations as it was only then that they found how far wrong the diagnosis had been in many cases.

In several cases he found it impossible to give a large quantity of fluid by the stomach tube; then he left the tube in position, tying the end to the headstall, and gave stimulant treatment.

With reference to verminous aneurysm, it appeared that the larvae sometimes disappeared from the artery when the clot tended to break down and pieces were carried into the smaller blood vessels where they caused numerous emboli. Horses were not so well or carefully fed as formerly and he considered over-feeding rather than bad feeding to be a cause of colic; otherwise why did only one horse in a stable of 20 or so, fed exactly alike, show signs of colic? With regard to water, he advised that animals returning from work, unless in an exhausted condition, be allowed to drink as much as they wished. Impaction of the ileum often caused anti-peristalsis, resulting in rupture of the stomach. Early treatment was necessary to prevent the onset of toxaemia and should aim at restoring the normal functions of the intestine, namely, peristalsis and secretions, as soon as possible.

Mr. C. Weighton observed that he had several cases in which there had been rupture of the stomach about three-quarters of an hour after the injection of arecoline. He thought enemata of little value. He asked if anyone had had any experience of lentin, a similar type of drug to acetylcholine, of which good reports were given by American writers. The speaker added that he had had a case of grass disease in Lincolnshire this spring. The animal died in about 48 hours.

Mr. G. Eaton said that in his practice—his is a similar country to Captain Gunning's, good rich pasture—in the majority of his colic cases the trouble was situated in the small intestine of the animal. He had used acetylcholine with good results but had found it rather expensive

and he was now using lentin; he had not, however, given it a sufficient trial to warrant a definite opinion on its use.

He used for these cases a drench consisting of one quart of liquid paraffin, 2 oz. each of turpentine and spts. ammon. aromat. and spts. aeth. nit. He considered istin good in small doses and stated that it was soluble in turpentine.

Mr. W. K. Townson, commenting that everyone had his pet treatment, said that it was much easier to give medicine by the tube, also it impressed the owner. There was a great advantage in giving, in some cases, large doses of saline solution by means of the tube. He seldom used enemata. Mr. Townson congratulated Major Hicks on his use of trochar and cannula; personally he had always been afraid to use it. He thought small doses of arecoline were the best—he had not appreciated its action on the heart.

Mr. T. J. Keall said he always liked to try the new things but he had not yet used acetylcholine and would certainly give it a trial. He thought the stimulant line of treatment the best and always used a combination of arecoline, eserine and strychnine. He also used the trochar if there was a large amount of tympany.

Several other members also participated in the discussion.

The Reply

Captain Gunning, in reply, said he was gratified that his paper had evoked such an excellent discussion. He wished to thank Major Hicks for his opening remarks. He was interested in what this speaker had to say regarding istin and the use of the trochar and cannula. He personally had been very reluctant to use the latter but from what Major Hicks and Mr. Keall had said it was obviously the correct treatment in certain cases. He thought the use of ammon. hydrat. in preference to the carbonate "a good tip." He also considered early treatment essential, especially if it was given hypodermically.

Captain Gunning was not surprised to hear so many different treatments, as in different districts they had different conditions. He fully agreed that arecoline should only be used in small doses: for his part, he never minded a horse rolling but thought it might be dangerous where the case had been going on for some time. Camphor in oil was a good stimulant and could be used in conjunction with arecoline. He had never heard of the stomach tube being left in position in the horse. Excessive sweating and drinking a lot of water might cause a condition of salt starvation as suggested by Harvey. The addition of sodium chloride to the drinking water was suggested as a remedy. In answer to Mr. Weighton, in the speaker's experience ruptured stomach seemed to occur most commonly in the spring. He was using lentin at the present time—he had been unable to obtain its exact composition but thought it was a synthetic acetylcholine. He had had similar good results with it, but was not yet sure whether it was as efficient as acetylcholine: it was certainly cheaper. Bad feeding was undoubtedly a common cause of colic as also was over-exertion; in fact, they generally went hand in hand. The temperament of the Shire predisposed him to colic more than lighter breeds such as the hunter and thoroughbred. Enemata were not very valuable but a rectal examination was. He considered that overloading the stomach was definitely a wrong form of treatment: he always used balls.

Foot-and-Mouth Disease*

ESMOND BROWN, M.R.C.V.S.

There was a little trouble over the title of this paper owing to a desire on my part to avoid raising your hopes. I wished to qualify the title by the use of a phrase which indicated that this paper was to be no systematic or scientific discourse. Your Council apparently did not find my title acceptable, and I certainly did not like their suggested alternative, so it was decided to fall back on the simple designation. You are warned in advance that this is to be no erudite discourse: the depths of science will remain unplumbed so far as we are concerned to-day. What I want to do is to probe a little into what this disease means to those of us who may come across it in the field.

If you will come a walk with me, we will take a quiet look at the countryside in, shall we say, a mixed farming district, and I think it shall be a day in early autumn though we may, by borrowing from other seasons, make a composite day of it.

There is plenty of life on these country roads—loaded milk lorries coming in from their rounds, lorries for delivery of cake and other feeding-stuffs going out on theirs; cattle dealers, pig dealers, poultry dealers making their visits from farm to farm. We draw to one side while a herd of cows passes slowly by to be turned out after milking, and in the farmyard we see the veterinary surgeon who stays to chat awhile with the farmer before going on to his next case. The butcher's boy whistles his way to the farmhouse door and leaves the joint of home-killed—or is it imported chilled beef he is leaving, with a few bones for the dogs? The postman hands in a parcel of Dutch bulbs, and departing meets the railwayman with a bundle of imported rose bushes neatly packed in straw, and there go the Breton onion-seller with his strings and the pedlar with his pack.

To-morrow will be market day, and the road will be further enlivened by cattle transport vehicles and drovers with their charges.

So as we stroll through the day, we see that every hour has its movement. We have had a glimpse of the hunt, heard the sound of sporting guns, joined in the rustic gathering at the "Shoulder of Mutton" at mid-day, and later, when the sun prepares to sink behind the church tower, we sit on a roadside stile. Down in the flats by the estuary hundreds of sea-gulls sit solemnly as though in parliamentary session. The flocks of starlings whirr nearer and nearer to the belt of tall trees which is their noted roost. There they will hold *their* parliament too,

*Presented to the Mid-West Division, N.V.M.A., at Bath, April 29th, 1938.

talking in German probably, for they have lately come from the Fatherland, while the gulls, good internationals, prefer French. The spinney over there holds a fox or two, and sharp eyes can pick out a hare at the far side of the field opposite. This hedgerow and dry ditch are a haunt of hedgehogs, not yet retired for their winter sleep.

On the wide turf edge gipsies have pitched their tents. They will move off in the morning, leaving their debris behind, for already, as the poet says, " . . . every bush we see, With scarlet patches tagged and shreds of grey." What may they not have brought with them, or what take away ?

Meandering through the meadows is a stream, flowing through farm and farm, from which the kine drink—when not lowing : there we see an angler pick up his gear and move off up-stream to try his luck elsewhere.

There is a sound down the lane opposite as a hefty sow breaks through a gap in the hedge, drops into the lane and is off with purposeful gait and a gleam in her eye, obviously going somewhere and with her own intentions.

A tramp slouches by, who later will be " seeking the straw in some sequestered grange." Soon the ploughman will plod his weary way homeward—through six lots of cattle. Then the courting couples will be out, and the poachers.

We are beginning to muse on the purpose of Creation when we have to disturb ourselves to let a man of the country pass over the stile. A cowman he is, and communicative. He has been to have a look at a sick cow on a neighbouring farm, a cow off food, down in her milk, and slobbering-like. There's two heifers lame in the water-meadows, too. Queer it is, and he'll go over and have another look after milking to-morrow.

This nearly puts an end to our musings. With a quick jerk we realise that what we have seen and all the thousand other movements which contribute to the live murmur of a country day might have been expressly designed by a malevolent deity for the spread of foot-and-mouth disease. I don't maintain that the purpose of Creation was solely devoted to that end, but there have been times when my jaded and jaundiced eye could see it in no other way.

Most of you, after wondering what all these sweet nothings have to do with the subject, are more or less deep in somnolence. For that I hold you blameless, having myself put you to sleep with this drone about a country day, but now I make a plea for the cultivation of the faculty of quick awakening, because foot-and-mouth disease has a way of coming upon you at just such moments, when least you dream of it, and failure to make a quick awakening may lead you to desolation. Bear in mind the extreme ease with which infection can be carried by both direct and indirect means, the small amount of virus necessary for infection of susceptible animals, all those intersecting movements at which I have already hinted, and you will readily realise how compelling is the necessity for quick action and counter-action. If you have any suspicion of the existence of this disease, action should be immediate, for even a short delay may have disastrous result. A practitioner should fulfil his legal obligation by reporting; an inspector, whether part- or whole-time, should sign the certificate of suspected disease and set in motion the machinery for the application of emergency restrictions on the movement of animals.

Having got this far, I can hardly postpone longer the question of diagnosis. If you are called in to premises where there is a suspicion of foot-and-mouth disease you will, of course, don suitable waterproof outer clothing, and see that you have disinfectant ready mixed and at hand. Get something of the history before you start your examination, though there may be instances where too much reliance need not be laid on what you are told—on one occasion, by cornering each of them separately, I was given by the cowman, the owner, and his nephew, three highly incompatible stories of the course of events prior to my arrival. As a rule you may as well go straight to the suspected animal or animals : there is not much point in going round all the presumably healthy in-contact animals first when attendants have already been to and fro among the stock. Take a little time before you actually handle the animal, and watch its behaviour. The temperature may or may not help you, but while taking it you can continue to ask a few questions. The first thing noticed about a milch cow may have been a sudden drop in the milk yield with some failure of appetite. If that was so, and your animal has bubbly saliva round the mouth, does a careful sucking act winding up with a gentle smack—not the smack of gusto—and at the same time appears tender on the feet, you may begin to think you are in the presence of a positive case. Start your examination of the mouth by turning back the upper lip, and look around the region of the dental pad. There may be one or more raw patches there, with ruptured membrane still adherent at the edges. Turn your attention to the tongue, and take a look at it before you grasp it. You may see a raw surface or detect an unruptured vesicle in this way. The fluid in a foot-and-mouth vesicle is not as a rule held under any great pressure, so all you may notice is a slight roll or undulation of the membrane on its upper surface of the tongue. In these cases when you take a grip of the tongue you may be surprised (or not, according to your

experience) to see first a red streak just above your hand, and then with the movement of the tongue find your hand slip away with a large piece of membrane, leaving almost the whole of the upper surface of the free portion of the tongue denuded and red-raw.

That will do for the mouth for the time being. Go to the feet and take a look, before you pick up, at the coronets at the junction of the digits in front and at the bulbs of the heels behind. You may see loose epithelium sticking out in front, and sore places at the heels. In the case of recently ruptured foot-and-mouth disease vesicles these sore places are sore indeed, and if you lay a finger on one of them the animal will usually let you know all about it at once.

Pick up the feet and examine the skin of the interdigital cleft. The foot-and-mouth disease vesicle usually runs right through from front to back just above the horn of the hoof, and in the case of a recently ruptured vesicle the epithelial covering remains in ragged shreds.

In the cow there may also be small vesicles on the teats.

A positive diagnosis of foot-and-mouth disease is often quite an easy matter, though there will be plenty of work for somebody as a result, but there are other conditions which give rise to suspicion and it is not always an easy matter to say " no " to them. I shall not mention all the conditions which have come my way in suspected cases of foot-and-mouth disease, but will briefly refer to a few. Among the most alarming of these at first sight is one particular form of so-called travelling disease or transit fever occurring in young cattle which, after spending their early lives in the open air are driven to market, herded together between the decks of ships and in closed lairages. Transit fever in this country is most often seen in animals recently imported from Ireland, and illness usually shows itself about seven to ten days after arrival. I am not going into all the forms of transit fever, which manifests itself in a variety of ways, but one may be confronted with a number of animals which are lame and salivating, with an occasional suck or smack, and running high temperatures. There may be reddened patches on the tongue and dental pad where successive layers of epithelium have been shed. In some cases the surface skin at the heel can be easily rubbed off leaving a dull red—but usually dry—surface.

These cases give rise to uneasiness on the part of the examiner, and it may be advisable sometimes to wait and watch. There is no true vesicle formation, however, and the duration of illness without spread beyond the particular lot of animals helps to a decision.

Vesicular stomatitis has been described at great length, especially by American writers. do I not think the disease they describe occurs in this country, but we do occasionally come across cases of vesicle formation in the mouths of cattle which are not affected with foot-and-mouth disease. The cases I have encountered have usually occurred in June or July and in cattle at pasture. There is no doubt about the nature of the lesion : it is a true vesicle. There may be one or more, up to the size of a half-crown piece, on the surface of the tongue, with or without other vesicles on the dental pad. There is excess salivation, sucking and smacking as in foot-and-mouth disease, and some systemic disturbance, though this is less severe and more transient than in the ordinary case of foot-and-mouth disease. The elevated membrane is tougher and more elastic—more " alive "—than that of the foot-and-mouth disease vesicle. The vesicle starts to rupture by a small hole in the centre and at this stage if slight pressure is applied, the fluid may escape in a fine jet. When the membrane is stripped off, the toughness and elasticity are apparent, in contrast to the stripped membrane of a foot-and-mouth disease vesicle, which has a macerated appearance and is easily broken up. If there are several lesions on the tongue, these have less tendency to coalescence than in foot-and-mouth disease. There are no foot lesions, but apart from that the method of healing of the mouth vesicles affords the greatest help in differential diagnosis.

In foot-and-mouth disease, healing takes place from the base of the lesion, the epithelium being built up in successive layers, and the papillae are gradually re-formed. In vesicular stomatitis healing is from the edge—in many cases it looks as though healing had started from one half of the circular edge and proceeded across the lesion to leave at one stage a crescentic slit where healing is not complete. The appearance of the lesion at this stage I regard as characteristic of the condition I have tried to describe.

Despite these differences, cases of vesicular stomatitis do not lend themselves to light-hearted decisions, especially when one remembers that sometimes in foot-and-mouth disease the eruption of foot vesicles may be delayed. Last July I had to deal with a case of vesicular stomatitis when five animals out of 13 had vesicles on tongue or dental pad or both, and the number affected increased to eight in the course of the next two days. It does not do to be too quick and clever under such circumstances, and no one is likely to blame you for caution.

I do not know the cause of this form of vesicular stomatitis, but am inclined to think that it may be due to some kind of plant poisoning, although I am prepared for that suggestion to be received with scorn.

Occasionally, in cases of "wooden tongue" there is a loss of membrane over an area of the tongue, sometimes at or near the tip, leaving a red raw surface, the sight of which causes one's heart to miss a beat. However, in those cases where the tip of the tongue is concerned, it may be noticed that there has been a change of shape from pointed to spatular, and hope returns. Put your hand on the tongue, feel the hard lump, and you can go home happy, though for the sake of appearance you may as well examine the feet before you go.

There are many other conditions which may give rise to suspicion of foot-and-mouth disease, but we must leave the bovines and go on to sheep and pigs.

Long, long ago, some writer whose name is lost to history made the statement that the gait of a *sheep* with foot-and-mouth disease was that of a "cat on hot bricks," and nobody seems to have questioned the assertion. On the contrary, successive generations of writers have repeated it, apparently calmly assured that the sight of a cat on hot bricks is an everyday occurrence. I have never seen it, so am in no position to contradict; nevertheless, I hold a deep conconviction that a cat placed on hot bricks would act a whole heap quicker than a sheep with foot-and-mouth disease. Whatever may be the rights as to that, a sheep with foot-and-mouth disease prefers to lie down, and is not usually in a hurry to get up. When made to rise and move, the gait is that of an all-round lameness, and there is not much else to be seen until a detailed examination is made. Vesicles are found on the feet in the same position as in cattle, and their presence forms fairly conclusive evidence as to the existence of foot-and-mouth disease. The usual mouth lesion in sheep is the dental pad vesicle. This usually affects the whole surface of the dental pad, from which the membrane can be detached readily by pressure with the finger or thumb. Occasionally one may find vesicles on the tongue in sheep, but these are not so constant or so characteristic as the dental pad lesion.

As you all know, foot affections are common in sheep, and their name is legion. True vesicle formation on a sheep's foot is the prerogative of foot-and-mouth disease, but quite often the burden of the diagnostician is increased by the proneness of shepherds to use dressings, more or less caustic, for each and every foot affection. Let us thank Heaven for the dental pad, which so often provides the decisive evidence, either negative or positive. (Where only a small number of sheep is concerned one may, of course, have to exercise caution in regard to a negative decision based on the absence of the dental pad lesion.)

In the *pig* the feet are again the most constant seat of lesions, and the vesicles tend to run right round the coronary band. There is a disinclination to rise, accompanied by vocal objection when the animals are disturbed. In a proportion of cases there are lesions on the snout. Unruptured vesicles in that position are quite obvious and convincing; after rupture, however, they are less easily discerned. In the sow there are often multiple vesicles on the mammae.

I will here quote from a paper submitted at the Annual Congress of 1929 of the N.V.M.A., by my colleague, Mr. J. O. Powley:—

> "When investigating reported cases in pigs the history of many pigs lame in more than one foot should always arouse suspicion, and when this is accompanied by shedding of the hoofs, one's diagnosis can be fairly certain. When the hoofs are not shed, and healing of the vesicular sores has taken place, an appearance is produced which is typical of recovered foot-and-mouth disease, *viz.*, the condition known as thimbling. By this is meant that the old hoof remains superimposed on the newly forming hoof in the manner of a thimble. Once seen, the appearance is unmistakable. To one not conversant with this appearance there is great danger of not realising its significance. . . .
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> "The question of diagnosis in the pig raises a very important point, and one that should never be lost sight of, *viz.*, that a percentage of initial outbreaks in this country originate in piggeries. These cases are sometimes not reported or perhaps not recognised until cattle begin to fall with disease. Meantime cattle and pigs may have been moved through markets and been responsible for widespread outbreaks."

I fully endorse Mr. Powley's remarks, and draw your thoughtful attention to the possibility of disease remaining unrecognised in swine.

Foot-and-mouth disease in the *goat* I have never seen, though I have seen a good many goats on premises where foot-and-mouth disease has existed.

One other point I must mention. In all susceptible species young animals sucking dams affected with foot-and-mouth disease may die suddenly from toxaemia, without showing lesions. In piggeries it sometimes happens that the first sign of anything amiss noticed by the attendant is the death of one or more sucking pigs. This is a fact worth bearing in mind.

As you will have noticed, I have not fully catalogued the diseases which may give rise to a suspicion of foot-and-mouth disease. There would be enough material in that alone for a full-length paper, and you would probably be surprised at the number and variety of conditions which have led to reports. Speaking generally, the distinguishing feature of foot-and-

mouth disease is the presence of the vesicles in their appointed positions, and *very little else* in the way of lesions. Heavy catarrhal conditions, inflamed membranes, dermatitic conditions of the lips and pasterns, swollen joints, foul mouths and foul feet—all these are outside the range of foot-and-mouth disease, which is a disease of blisters in clean surroundings.

Nevertheless, each case must be carefully considered, not so much on academic grounds as for the reason that error may have such far-reaching consequences. Experience is useful, but there is some danger that a too facile application of previous experience of cases which have turned out to be negative may lead to disaster.

It is as well to have a good think as well as a thorough personal disinfection before you come away. It is better to do this than to start thinking later on in the small hours when you should be sleeping peacefully. For my part, I always imagine that there is a legend on the farm gate after the fashion of those little notices which appear on the inside of the doors of restaurants in those continental countries from which foot-and-mouth disease comes: "Have you nothing forgotten?" say these notices, near the door knob. (And should I leave my gloves behind the next time I call on any of you, do not, I beg, remind me of my preaching.)

If my imagined legend is necessary on the inside of the gate, what should there be on the gate of every farm, to be read on entering? I have often reflected as to how far one can expect the country practitioner to carry his awareness of the possibility of running into foot-and-mouth disease. He cannot be actively thinking foot-and-mouth disease all the time, for madness would lie that way, but the practitioner should have something at the back of his mind which slight stimulus will bring forward. And in that I find some excuse for my paper, a paper which contains nothing new, which tells you that which you yourselves do know. It may help a little to remind you that this disease is not just an item of news for the B.B.C. to announce to you at your fireside. It may come much closer to you than that, and it will be much better for you if you have the right thought in time.

You will readily understand that I am debarred from discussing questions of policy; nevertheless, I may venture on a few remarks of a general character which border on that forbidden ground. It has been alleged against the slaughter policy that it is unscientific, that it is cruel, that it is too drastic a method for adoption in the case of a disease readily curable.

The contention that the slaughter policy is unscientific seems to me to arise from superficial thinking, based on a mediaeval conception of a scientist as a bearded old gentleman surrounded by weird apparatus including a retort—always a retort—from which he distils what he hopes will be the elixir of life. A ruffian with a humane killer may not have about him that air of mystery which distinguishes the scientist, but as an instrument for cutting short the manufacture of the virus his gun is superior to other scientific apparatus. We should not confuse science with elegance.

With those who see cruelty in the slaughter policy I have some sympathy, but let them reflect that the slaughter of a few thousand animals has saved hundreds of thousands of other animals from enduring a most painful malady. I will not weary you with statistics, but the official returns relating to the disease in continental countries during the past winter tell the tale of tens of thousands of fresh outbreaks each month. Nearly forty thousand outbreaks in the Netherlands in one month, what a sum of suffering must not that imply!

The continental bulletins also supply an answer to those who see in foot-and-mouth disease a disease readily curable. Cure? Yes! Cure and cure again. Cure them of type "A" and "O" and "X." Cure a thousand flocks of lambing ewes, and then cure a thousand more! Cure without end!

There are those who bring cures to us from France, from Germany, from the Argentine, from Fairyland. Some of them are secret cures, bequeathed by life-saving uncles who had them, like recipes for Worcester Sauce, from grateful Orientals. Meanwhile, foot-and-mouth disease continues to rage in those countries from which the cures come, except in Fairyland, where it never was.

Do not, on this account, write me down as sitting complacently under the slaughter policy, or as one who has no faith in better things to come. May the authentic messenger with good tidings come, and may Heaven send him soon. Until he comes we must slaughter, however abhorrent may be the details.

In conclusion, I have to apologise for inflicting on you a paper so full of nothing, save defects. An essayist should be in love with his subject. I am far from being in that ideal state, for I regard foot-and-mouth disease with so deep and abiding a loathing that only by supreme effort can I force myself to mention the word "vesicle" without the preface of unparliamentary qualification. Let not that deter you from criticism and questions: I am accustomed to both, and will answer or dodge them in accordance with the best tradition.

. . . . .

Discussion

Mr. W. Tweed: When asked to open this discussion I knew my task would be easy. Mr. Brown's literary ability and ripe experience have

given me little to criticise in his paper, but his gift of humour will oil the wheels of human relationship in such a way that we will learn something from a discussion with him.

Differential diagnosis could be discussed in great detail in a paper of this sort and Mr. Brown leaves it to us to raise any points for discussion. In his paper he avoids being the tipster and it is a pity the many truths expressed are never to reach their true destination. Nevertheless, he will have achieved his object if those of us privileged to be present to-day are given some food for thought.

Occasionally one can be haunted after seeing a negative case with feelings of something lacking to correlate lesions found on both the mouth and feet, but in the majority of cases it is usual to be able to form a definite opinion. Coincidence plays queer tricks sometimes in the lesions which are met with in both the mouth and feet and to be dogmatic about diagnosis in some cases is unwise. The attitude of mind one adopts in dealing with the diagnosis of this disease should compare with that in the diagnosis of other diseases, namely, strict attention being given to details.

Some owners are shy of officials and police and often the veterinary practitioner is made the go-between. In many cases this is an unenviable position and Mr. Brown has no doubt often been approached by a practitioner to give an opinion on a case without the case having been reported to the police at that stage.

Where a practitioner is unable to give a definite negative diagnosis he must waste no time and adopt the procedure laid down in the Order.

The veterinary practitioner has another difficult situation to face when asked by owners to examine suspected cases in an existing infected area. A practitioner would be acting wisely, in my opinion, when he suspects the disease from the history given him by his client over the telephone, to give them helpful advice that to comply with the law removes fear of the law. Perhaps Mr. Brown would discuss these points again in his reply.

The successful control of this disease is so dependent on the co-operation of owners in reporting it, that one is often drawn to compare the number of suspected cases where foot or mouth lesions in animals are looked for and reported by owners during the period in which the control of an outbreak in an area is being carried on, with the number reported at other times when the disease is not uppermost in their minds.

It has sometimes been suggested that widespread outbreaks of the disease may be caused from unreported cases in pigs.

It is conceivable that the disease might be overlooked in meat inspection if the pigs were slaughtered, as their hooves are removed in the process of dressing and their noses are always upside down and near the floor when the carcase is presented for inspection; yet it does not appear to me more convincing to single out pigs any more than sheep in this connection.

In the case of sheep affected with foot-rot and foot-and-mouth disease there may be some masking of the symptoms of the latter disease but the intelligent shepherd, who usually knows his sheep ailments, is unlikely to overlook it. He might report the fact to his employer who was too occupied to see the sheep with him until recovery had commenced and then they talked it over and blamed the weather.

It is not surprising that the source of infection in some initial outbreaks is most indefinite. The late Professor Symonds stated that sufficient infection could be carried on the end of a walking stick to set up the disease elsewhere. A stock owner or dealer may get infection on his clothes and then be welcomed home amongst his own stock who showed their curiosity by nosing or licking his clothes. Only recently a breeder of pedigree stock was interviewed about the Attested Scheme and a thorough understanding of eliminating tuberculosis was shown. Notices printed "Foot-and-Mouth Disease," prohibiting the entry of unauthorised persons to the premises were at the entrance, yet the same owner was feeding foreign meat to his kennel of St. Bernard dogs on the premises. The fact remains that often circumstantial evidence exists but is insufficient to convince a jury.

The research of this century may reveal many unknown facts regarding virus diseases in general when one considers the progress made in the elucidation of bacterial diseases during the last century.

It may well be, however, that by filling gaps from time to time in our present methods of dealing with the disease the slaughter policy will still prove the only satisfactory method. Mr. Brown has indicated how some of these gaps can be filled in order to prevent widespread outbreaks of the disease.

Mr. S. V. Golledge said he desired to compliment the essayist upon the excellence of his paper—particularly the introduction, which was indeed a splendid literary effort. He wished to enlarge upon one point in connection with diagnosis and that concerned the difficulty of recognition by sight alone of early lesions located between the claws in cattle. Unruptured vesicles in this position were by no means always self-evident even when the cleft had been thoroughly cleaned out, but palpation was very useful as the bleb could often be recognised by touch and even slight pressure appeared to occasion considerable pain which was usually evidenced by the animal in no uncertain manner.

Dr. W. Scott, when called upon by the Chairman, observed he had little to say for he came to hear and not to be heard, nevertheless it gave him great pleasure to congratulate Mr. Esmond Brown upon giving them such an excellent paper. It was indeed a real intellectual treat

to listen to him. He had risen to the occasion and reached Olympian heights, carrying his audience with him. It was not often one found at those meetings such a charming combination of rare wit and sound logic. The paper would be read and appreciated by and chuckled over too, by a large body of the profession thereby bringing pleasure and profit alike to the reader. He often wondered if they appreciated to the full the amount of time involved and "grey matter" exercised by an essayist in the production of his thesis. On that basis alone they owed a debt of gratitude but when the theme was superexcellent, as this one was, then their debt knew no bounds. He had only two questions to ask. How long would the virus of foot-and-mouth exist outside the animal body (*a*) under favourable conditions, (*b*) adverse conditions. Had the essayist ever confirmed a case of human infection from foot-and-mouth disease in cattle?

Dr. Scott concluded by congratulating Mr. Tweed on the masterly manner in which he had opened the discussion.

Mr. C. R. Golledge asked if he had acted correctly in ordering a client to stop milk leaving the farm, pending examination of the herd by Ministry officials, when, from a telephone conversation with the client, he strongly suspected that foot-and-mouth disease had broken out on the farm.

Was he right in presuming, from what Mr. Brown had said, that the temperature of a suspected animal was of little assistance in arriving at a diagnosis? Personally he shared Mr. Brown's views that it did at least give one an opportunity to notice the behaviour of the animal and collect one's thoughts preparatory to making a thorough clinical examination.

Mr. W. F. Aston followed up Mr. Golledge's question concerning the temperatures of animals affected with foot-and-mouth disease by mentioning the case of a cow which came under his notice during the last severe outbreak in his district (Devizes). The animal had eaten nothing the day previous but on his arrival was picking hay and had quite a normal temperature (102° F.). On examination of her mouth he stripped off a piece of epithelium, the size of two fingers, from her tongue.

Mr. A. E. Gachet asked what steps were taken as regards the milk that had left the farm that day, or the previous day, when suspicion of the existence of the disease was reported: also if the milk was likely to carry the infection.

Mr. J. C. S. Powell, after thanking Mr. Brown for his paper, observed that he had often heard farmers in his district remark that they thought foreign feeds might be a source of infection in this country, especially in view of the fact that the disease always occurred at the time when these feeds were mostly being used. What was Mr. Brown's view of the matter?

Mr. H. C. Wilkins asked if Mr. Brown had any observations to make as to the relative susceptibility of animals in high and low bodily condition, and whether animals in high condition contracted disease more readily than those in poor.

Mr. T. J. Margarson asked if Mr. Brown had any proof that foot-and-mouth disease was a contagious disease.

Mr. H. S. Robinson after congratulating the essayist on converting an apparently dull subject into a remarkably interesting one, enquired as to the course of action a part-time veterinary inspector should take on finding an animal showing some suspicion of foot-and-mouth in a market after selling had commenced and what were the consequences to the vendor and purchaser of the lots sold.

The Reply

Mr. Brown thanked the members for their kind reception of his paper, and he wished particularly to thank Mr. Tweed for the way in which he had opened the discussion. He agreed with Mr. Tweed that in dealing with a diagnosis strict attention should be given to details and the collection and consideration of all evidence available. As to owners being shy or afraid of officials, he (Mr. Brown) had not experienced much of that; on the contrary, there had been occasions when he wished he *could* make them afraid of him.

If a practitioner, called on by an owner to examine an animal in an infected area, was unable to clear his mind of suspicion of foot-and-mouth disease the case should be reported to the authorities at once. It was, of course, true that when foot-and-mouth disease was about in a district, owners reported all manner of conditions which would not have caused them uneasiness in normal times.

Mr. Tweed was inclined to question the special position of the pig in regard to unreported cases, and asked, "Why single out the pig?" The answer to that was that the pig singled itself out, for it was a matter of history and experience that swine had caused more trouble in this way than sheep or any other animal. He (Mr. Brown) had not suggested in his paper that the disease was overlooked in meat inspection—though that was possible. What he meant to point out was the danger which lay in free movement of animals to markets and slaughterhouses in and from a district in which one of those unreported cases was in existence—all those movements of the countryside to which he had referred in the introduction to his paper. He hoped the purport of that introduction had not been lost on his hearers, as everything in it had meaning and reference to the subject.

The essayist agreed with Mr. S. V. Golledge in his remarks about the foot lesions in cattle. The sense of touch and the animal's response often gave the first clear indication of the presence of a lesion.

With regard to Dr. Scott's question concerning the length of time the virus could live outside the animal body under varing circumstances, it was difficult to give a cut and dried answer. The Progress Reports of the Scientific Committee gave a good deal of information on this and other aspects of the virus. As to foot-and-mouth disease in human beings, he had seen cases in which the disease was suspected, but they did not look much like it to him. In the same way some of the recorded cases did not seem altogether convincing, but he was prepared to admit the possibility, especially of those cases where children became ill after drinking milk from diseased cows.

In reply to Mr. C. R. Golledge's questions it was quite right to stop milk leaving the farm under the circumstances described. The temperature of an animal or animals might or might not help in forming a diagnosis. It was not always a reliable guide, and the tendency was for the temperature to fall to normal after rupture of the lesions.

With regard to Mr. Gachet's question about milk which had left the farm prior to report,

it was sometimes possible to get hold of this before it had been bulked or distributed and in those cases it was suitably dealt with. Fortunately one of the first things that happened when a cow became affected was a drop in the milk yield, which probably helped to reduce the risk which attached to milk distribution.

In reply to Mr. Powell, the essayist agreed that foreign feeding stuffs might be a source of infection, but to deal with this so as to prevent all risk was rather a big question.

Mr. Brown was unable to give Mr. Wilkins any information as to greater susceptability of animals in high condition, but he did not think that low condition would be regarded as giving any important degree of immunity.

As to foot-and-mouth disease being contagious, he did not know how much proof Mr. Margarson wanted, but there had been a good many occasions when it seemed to the essayist very much like a contagious disease, and it was best treated as such.

In reply to the President, Mr. Brown said that in the case of suspected disease in a market after selling had commenced, persons present should be warned, and such disinfection as was practicable should be carried out. There had been instances of disease being discovered in a market during selling and although the question of ownership and compensation had been rather complicated in detail, settlement had eventually been reached.

THERAPEUTICS OF ANTIMONY

We draw the attention of our readers to "Advances in the Therapeutics of Antimony" by Professor Hans Schmidt and Dr. F. M. Peter* by means of publishing the *British Medical Journal* review (printed below) because in the treatment of tropical diseases, particularly the common form of nagana in cattle caused by *Trypanosoma congolense*, antimony, in the form of some of its compounds, has given apparently the best results. Our readers who are interested in tropical veterinary pathology will no doubt like to consult this book.

"This is an English version of *Ergebnisse und Fortschritte der Antimontherapie*, which was published early last year. In our review of the German volume (*British Medical Journal*, 1937. 2. 66.) we mentioned the remarkable rapidity of the advance in the treatment of tropical diseases. An English edition is, therefore, very welcome; moreover, the authors have revised and expanded the original material, and have incorporated the literature up to the end of 1937. They have also added an author index, which is a very valuable addition. Dr. Philip Manson-Bahr has contributed a preface, in which he reviews the extraordinary career of antimony as a therapeutic agent. Jezebel used it to darken her eyebrows, Paracelsus boomed it as a panacea, and the University of Paris solmenly banned it and all its users. In the first half of the nineteenth century it was the chief basis of the orthodox method of "heroic" treatment, while by the end of the nineteenth century it had almost ceased to be used. Finally, in the twentieth century it has made a sensational come-back, and organic antimonials are steadily increasing in importance in chemotherapy."

**Advances in the Therapeutics of Antimony.* By Professor Dr. Phil. Nat. Hans Schmidt and Dr. Med. F. M. Peter. With a preface by Philip Manson-Bahr, C.M.G., D.S.O., M.D., F.R.C.P. (Pp. 257; 10 diagrams. R.M. 18; bound, M. 19.50.) Leipzig: George Thieme, 1938.

Immunity in Foot-and-Mouth Disease

H. C. WATSON, M.R.C.V.S.
Hong Kong

Foot-and-mouth disease made its appearance in a herd of 1,000 dairy cattle in Hong Kong on February 8th, 1934. The cattle in this herd are all of European breed: there had been no outbreak of foot-and-mouth disease on the dairy farm for at least twelve years.

Cattle are housed in 45 cowsheds over an area about a mile-and-a-half long and half a mile deep. By July 24th, 1934, the disease had visited 33 of these cowsheds wherein were housed 951 animals. Altogether 60 animals died or had to be slaughtered as the result of severe foot lesions: the remainder made a complete but very slow recovery. Not all animals in contact with the disease showed clinical signs of it.

In January, 1935, foot-and-mouth disease again broke out in a shed containing twelve heifers which had escaped the disease in 1934. All these heifers became affected within ten days of the commencement of the outbreak, while in a neighbouring shed containing 25 cows, only six animals were attacked, these six being the only cows in the shed which were not affected in 1934.

After two years of freedom from foot-and-mouth disease, it appeared in a shed containing 26 cows and two bulls on April 12th, 1937. Of these animals, five cows and one bull had never suffered from the disease: the remainder had all been infected or in contact with infection in 1934.

By the end of April the five cows and the bull referred to above developed the disease: only one other cow in this shed became affected: this cow had been in contact with foot-and-mouth disease in 1934 but had shown no symptoms of it. During this outbreak the disease attacked only one other shed—containing heifers which in 1935 were unborn.

It would appear from these facts that the particular type of foot-and-mouth disease which attacked the herd in 1934 conferred an immunity of at least three years' duration. The initial outbreak, although it caused considerable depreciation of milk yield in the herd, was by no means a great calamity: the death rate of 60 would undoubtedly have been smaller had the patients not had to contend with tropical heat while suffering from severe foot lesions.

The Veterinary Record
August 20th, 1938.

Our Correspondence Columns

Memorandum of Association: *Paragraph 1 of Objects*:—

> "The promotion and advancement of veterinary and allied sciences, the affiliation of local societies (whilst preserving their independence); and to support and protect the character, status, interest and honour of the veterinary profession."

FROM its inception this journal has encouraged a free and vigorous correspondence upon professional matters and it may be said that the appeal of the *Record* to many readers is to some extent dependent upon this fact. From time to time the Editorial Committee of this journal has been castigated by a few of those who contribute to our correspondence columns, under the infrequent circumstances in which their communications have been either blue-pencilled or rejected.

Such aggrieved members have even gone so far—upon occasion—as to regard our action as justifying a severance of further connection with the *Veterinary Record*; or—more drastic still—resignation from the Association.

We can quite understand that contributors might feel aggrieved at the absence of explanation, but we are confident that such decisions would never be arrived at were these gentlemen cognisant of the very pertinent reasons which so often guide the committee's action. It is for the specific purpose of clarifying the situation that we deem it expedient to publish the following observations.

When members seek to attack or insult their professional colleagues, either individually or collectively, through the medium of our columns; seek to stir up revolt, or sow the seeds of hatred and jealousy in one branch of the profession against another, we should plainly fail in our duty if we allowed such diatribes to see the light of day.

The duty of the Editorial Committee is first to the Council by which it is elected, and it follows as a corollary, that since the Council N.V.M.A. exists to further the interests of the veterinary profession as a whole, all matter published in its official journal must be in accordance with similar aims. (*Vide* extract from memorandum of Association quoted above.)

The columns of the *Record* are not closed to non-members of the "National," and whilst all may use them, we reserve the right to ensure that they use them well.

It follows from what has just been written that the *Veterinary Record* MUST be entirely non-partisan. The interests of whole-time officers, general practitioners, research workers, etc., etc., must be equally served, and we can in no circumstances permit one section to carry on a campaign against another.

We are not unmindful of the fact that the *Veterinary Record* is the chief medium through which members may express their opinions, and so far as is expedient, we afford the utmost freedom of expression.

It is recognised that items of correspondence represent the products of the minds of those who write them, but not necessarily the views of the Association. That the law of libel must be observed is a fact which appears to escape the recollection of a few who are not averse to writing scurrilous letters. Full licence to contributors would, in many cases, have mulcted the Association in heavy damages or, at least, involved it in litigation.

During the last twelve months, when the most delicate negotiations were in progress with the Ministry of Agriculture, letters were received couched in the most injudicious terms, which—if published—would seriously have jeopardised the relations between the two bodies. Members, who are not in full possession of facts and developments, must not regard it as a personal affront if their ill-informed and therefore often ill-advised communications are not accepted for publication.

Readers may rest fully assured that nothing will ever be suppressed unless there is a real and adequate reason; and further, that the Editorial Committee (so fully representative of all branches of Veterinary Science) sits as a jury, and has access to sources of information quite impossible to the ordinary member, upon which it is able to base its judgments. Not infrequently, the prestige and interests of the very writer himself are protected by refusing to publish the matter he submits.

Lastly, it must always be borne in mind that the *Veterinary Record* has an ever-increasing circulation outside of the veterinary profession; and whilst questions must inevitably arise which would be better discussed privately, it would be unwise to make them public property.

As we have striven in the past, so will we endeavour in the future to discharge our duties without fear or favour and in a spirit of strict equity. On account of the critical times which are likely to face the profession, we have felt it incumbent upon us to publish this editorial article, particularly to encourage our readers to contribute to our correspondence columns, within the bounds of fairness, asking them not to be disturbed if we have occasion to exercise such a censorship as we shall never undertake except in the mutual interests of all.

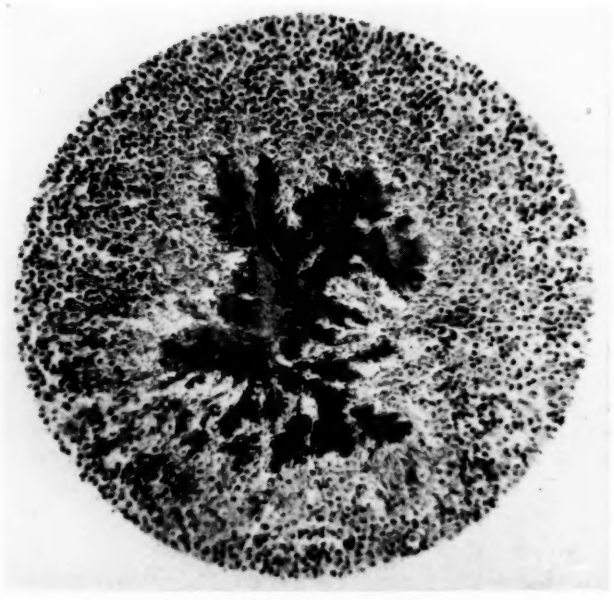

FIG. 1.—Paraffin section of liver lesion stained eosin-methylene blue. High power. A colony is seen in the centre with a zone of necrosed macrophages around it, the whole surrounded by numerous macrophages and a few polymorphs.

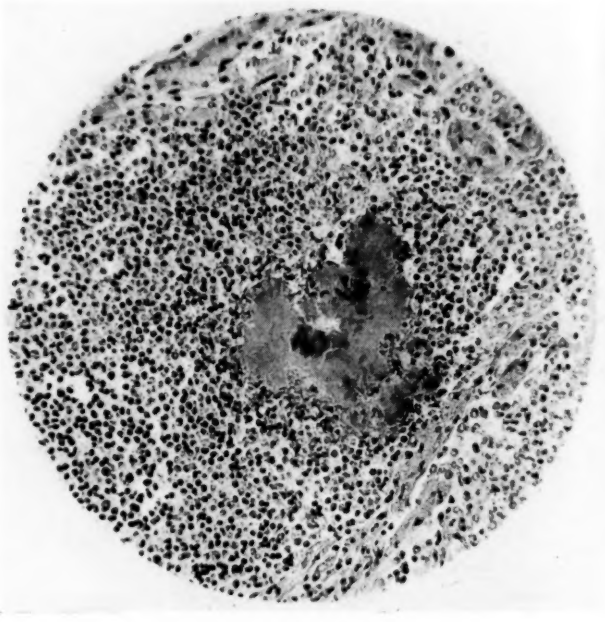

FIG. 2.—Paraffin section of liver lesion stained haematoxylin and eosin. High power. A colony is seen in the centre. To the lower right are seen trabeculae of degenerating liver cells and a sinus greatly distended with multiplying macrophages.

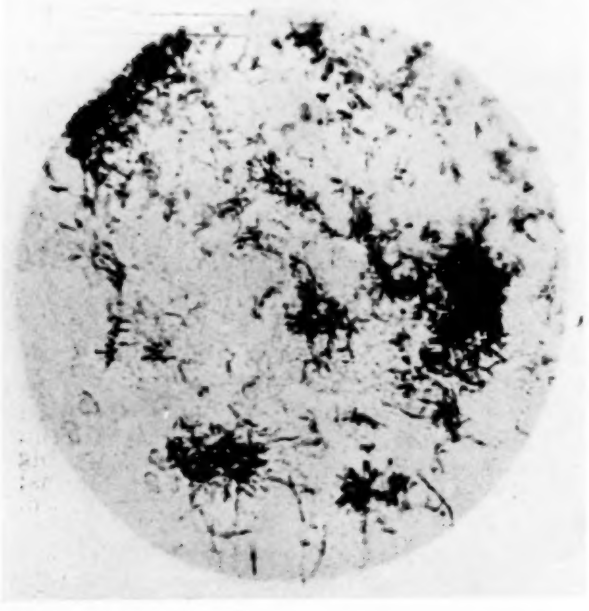

FIG. 3. Paraffin section of liver stained Gram. Oil immersion. The figure shows young developing colonies consisting of Gram-positive branching filaments.

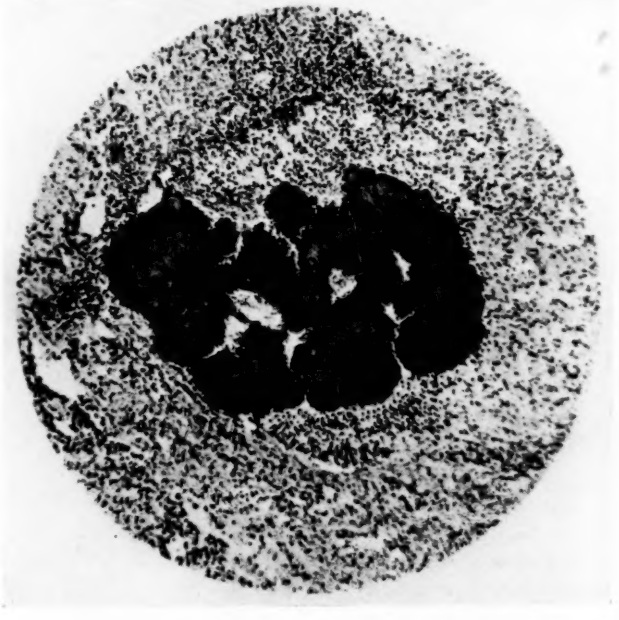

FIG. 4.—Paraffin section of lung lesion stained Gram. A large central Gram-positive colony is seen surrounded by numerous multiplying histiocytes.

CLINICAL COMMUNICATION

An Actinomycotic Disease in the Dog

D. SLAVIN, M.R.C.V.S.

Royal (Dick) Veterinary College, Edinburgh

The animal was a foxhound which had been suffering from a chronic illness for some months. The carcase was already fairly decomposed when received for examination.

Post-mortem Findings.—The chief *post-mortem* finding was suppuration of the entire right half of the liver with the formation of numerous pinhead- to pea-sized abscesses which had in parts coalesced to form larger ones. The pus was soft and creamy with a very faint tinge of green. The suppurative process extended laterally through the diaphragm to the ribs, one of which showed on its medial side, a subperiosteal abscess about the size of pigeon's egg. The liver, diaphragm and ribs were adherent and difficult to separate. Examination of the skin failed to show any gross change and even the outer surfaces of the ribs were unaffected, so that it does not appear that the infection had originated from a skin wound. The pleura showed no abnormality apart from the localised pleurisy at the affected rib and diaphragm. The lungs showed about five or six pea-sized abscesses, suggesting pyaemic spread. No other abnormality of importance could be found and none of the lymph glands showed any gross change.

Cultures made from the lesions were quickly overgrown by *post-mortem* invaders and proved negative for any known pathogen. Microscopic examination of smears showed numerous Gram-positive filaments. In the liver and lung lesions numbers of irregular colonies of a Gram-positive actinomyces type of organism were observed. The morphology of the colony is seen in the accompanying illustrations. The colony in Fig. 1 is showing central degeneration and consists of central Gram-negative amorphous material, and towards the periphery, of strongly Gram-positive irregular branching filaments. These filaments are roughly about 1 micron in thickness, although thicker and thinner forms were noted in various colonies. The filaments were most irregular in shape, wavy forms, S forms and serpent-like forms being seen frequently. They also seemed to have a very thin sheath similar to that of *Fusiformis necrophorus*. The ends were rounded or slightly thickened. A few colonies also showed small Gram-positive cocci similar to the so-called "spores" of *Actinomyces bovis*, and practically all the larger colonies in the liver showed a greenish-brown pigment around them (possibly bile pigment). No clubs were seen in any colony and no acid-fast structures were noted.

Histo-pathology.—Around the organisms large numbers of macrophages and a few polymorphs were seen. Towards the periphery of the lesions, the liver sinuses were greatly dilated with blood and numerous multiplying macrophages were observed within them. The liver showed many haemorrhages, and numerous erythrocytes were found around the colonies. The lung lesions showed similar histological changes.

From the above histological findings the author has no doubt that the organism described was the actual causal organism of the condition. There was certainly no doubt of its Gram-positiveness, so that it would appear to be some member of the actinomyces group, and from the absence of clubs it would not appear to be *Actinomyces bovis*. The author has not been able to find any reference to any condition in the dog resembling this in any current text.

A GERMAN VIEW OF CAVALRY

A military correspondent writes to the *Manchester Guardian* (letter published July 29th):—

"During the next ten weeks the majority of troops in this country will be engaged in the penultimate training for the year. It is to be hoped that the exercises with the mechanised formations will produce results that may be more satisfactory than those effected last summer. The military authorities have placed 'all their eggs in one basket' and gone in for complete mechanisation, to the elimination of the horse. It is not proposed to argue upon this question, which has been decided by the British military experts, but it is worth noting that there are experts of another nationality who do not agree with them.

"The writer has just returned from a tour in Germany. During his visit he was the guest at the barracks of a German cavalry regiment. The modern German cavalry regiment is a big affair. It has an establishment of ten squadrons; of these five are mechanised and five are horsed. The German officers gave some salient reasons for the maintenance of the mounted man in modern warfare.

"Two of these reasons may be given here. How do you propose with mechanical movement to make a thorough and rapid reconnaissance in forest areas? How can you make a rapid march or any movement by night when silence is the essence of success, by any means other than with horses? All mechanical movement is too noisy to be effective at night, when operations must be conducted in silence."

ABSTRACTS

[**Reduction of the Normal Duration of Heat in the Mare by Aid of Prolan.** (Trans. title.) Mirskaya, L. M., and Petropavlovsky, V. V. (1938.) *Cornell Vet.* **28.** 1. 58-61.]

Various investigators have shown that the optimum time for service in the mare is approximately two days before the end of oestrus. In the mare, however, since the duration of the oestrus cycle is extremely variable, it is impossible to forecast with any certainty the period in the heat at which ovulation is likely to take place without resorting to daily palpation of the ovaries. Having regard, therefore, to the known facts regarding the effect of the anterior pituitary and ovulation, the authors reasoned that the time of ovulation could be controlled by the injection of prolan and the optimum time for service thus determined. The method adopted was to give 500 M.U. of prolan subcutaneously to those mares which "showed" to the teaser, and which on rectal palpation showed a follicle 1 cm. in diameter in the ovary. The injection was repeated in eight to twelve hours. Three or four examinations were subsequently made to determine whether ovulation had taken place. After injection of prolan ovulation usually occurred in 30 to 48 hours, thus causing the duration of the oestral period to be about half that usually quoted, and in the great majority of mares only one service was required. The foaling percentage of 77·8 to 83·8 is stated to be above the normal expectation.

N. J. S.

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[**The Cure of Sterility in Sows with Wheat Germ Oil.** (Trans. title.) Lentz, R. W. (1938.) *Berl. tierärztl. Wschr.* 14. 201-202.]

Various Continental workers claim that certain types of sterility in animals are associated with a deficiency of vitamin E in the diet. A common symptom is failure to come into oestrus, and in the series of cases reported in this article this failure was thought to have been associated with an unbalanced diet. Lentz gave two injections each of 15 c.c. of a proprietary wheat germ oil preparation ("enoulan") intramuscularly, and as a result 12 out of 20 sows treated became pregnant and produced litters.

N. J. S.

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[**Hormonal Sterilisation of Gilts.** (Trans. title.) Koch, W. (1938.) *Tierärztl. Rdsch.* **44.** 14. 222-224.]

The author reports that he was able to suppress oestrus in gilts by the injection of 5,000 R.U. of prolan in oil (10 c.c.). The injection is given subcutaneously, and must be carried out before the gilt comes in oestrus for the first time. It was found that inhibition of oestrus lasted for two to three months. Oestrus can likewise be suppressed in cats and dogs by the injection of relatively large doses of prolan.

N. J. S.

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[**A Study of the Blood of Pigs.** Fraser, A. C. (1938.) *Vet. J.* **94.** 1. 3-21. 8 tables. 19 refs.]

This study is divided into two parts (1) a description of the morphology of the various blood elements stained supra-vitally and in fixed smears, and (2) numerical standards of these elements as observed by the author, with full tables. Figures for the following blood elements are given: red and white blood corpuscles, reticulocytes, differential white cell counts, and platelets. The only omission, which is rather unfortunate, is that of haemoglobin values. An adequate description of the technique employed is given.

The animals studied were divided into four groups according to age:—

I. Young sucklings, birth to three days (eight animals).
II. Sucklings, one week to one month (34 animals).
III. Feeding pigs, two to seven months (three animals).
IV. Adult pigs, one to two years (15 animals).

The results confirm the findings of Doyle *et alia* (1928) that suckling pigs undoubtedly suffer from a "physiological" anaemia from which they recover providing the right haemopoietic factors are available.

[This excellent article should be consulted by all who are interested in normal haematological standards.]

D. L. H.

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[**Histology of Diabetes Induced in Dogs by Injection of Anterior-pituitary Extracts.** Richardson, K. C., and Young, F. G. (1938.) *Lancet.* **224.** 5985. (May 14th, 1938.) 1098-1101. 4 microphotographs. (10 refs.).]

The authors refer to the work of Houssay and others that showed that daily injections of suitable anterior-pituitary extracts into intact animals may induce the temporary appearance of the symptoms of diabetes mellitus. Young (1937) showed that a large dose of a suitable extract given daily to dogs caused a diabetic condition that may continue after the injections cease and apparently becomes permanent. Permanent diabetes produced in

this way differs from that produced by removal of the pancreas, in that the dogs are apparently able to survive indefinitely without insulin therapy, but depancreatised dogs will only live at the most for a few weeks without insulin.

Five dogs were treated with a suitable extract by daily injection and a histological study of the pancreas carried out.

Pancreatic tissue was obtained from two dogs during the period they were receiving the pituitary injections. In both cases cellular proliferation of the islet cells with degeneration of individual cells were seen. Pancreatic tissue was obtained from two other dogs that had been rendered permanently diabetic by means of injections of anterior-pituitary extract. In one dog that probably had died in diabetic coma there was no detectable normal islet tissue—the islets being completely hyalinised and not even degenerated cells resembling alpha or beta cells could be distinguished. In the other dog there were some normal cells but the majority showed cytological changes. The fifth dog failed to become permanently diabetic though a severe temporary diabetic condition was produced. The pancreas in this animal was normal.

The authors submit that the islet cells may respond to injections of anterior-pituitary extract by (*a*) proliferation, (*b*) hydropic degeneration, (*c*) disappearance of the granules in the cytoplasm and, finally, hyalinisation may occur.

[An interesting point is made in the discussion in the paper that a sublethal dose of colchicine given to normal rats causes within eight hours excessive hypertrophy and vacuolation of the dividing pancreatic islet cells.]

G. F. B.

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[**The Treatment of Bovine Mastitis with Sulphanilamide.** Allot, A. J. (1937.) *J. Amer. vet. med. Ass.* **91.** 5. 588-596.]

The therapeutic value of sulphanilamide was tested on three cows affected with chronic mastitis. Doses of 30 grammes were administered orally twice daily and the treatment continued over periods varying from five to twelve days. The milk was examined daily by the following tests: Breed smear, Hotis test, microscopic examination of incubated samples and culture on blood agar. The interesting feature of the trial is the tolerance of cows for sulphanilamide but there is no evidence from the tests employed that the drug produced any permanent destruction of streptococci within the udder. The author, however, claims that there was a definite response as judged by clinical and laboratory tests. He recommends doses of 30 grammes of sulphanilamide four times a day.

S. J. E.

REPORT

Nigeria

REPORT OF THE VETERINARY DEPARTMENT FOR 1936

Here is a department that has accomplished a colossal amount of work during 1936, for the Chief Veterinary Officer's report tells us that, apart from other work, the Department has completed the immunisation of no less than over 600,000 cattle against rinderpest and that over 430,000 animals were inoculated for black quarter, 117,000 against contagious bovine pleuro-pneumonia, and some 13,000 and 12,000 against trypanosomiasis and anthrax respectively.

The majority of the biological products used were manufactured at the Vom laboratory, but to meet the greatly increased demand laboratories at various provincial veterinary centres were started, and from this source some 100,000 doses of spleen vaccine for rinderpest control were issued.

Rinderpest is the chief disease of the territory and rinderpest immunisation camps are established in the main cattle raising provinces. To these camps native owners voluntarily bring their cattle, while no compulsion of any kind is used or required. In a few cases it is necessary to give a temporary immunity by the inoculation of spleen vaccine, but what the native owners much prefer and almost universally demand is the life-long immunity given by the sero-virus inoculation. The average death rate from this inoculation has been kept as low as 2·5 per cent., a figure which satisfies everyone, especially when it is remembered that a death rate of 75 to 90 per cent. is likely to result from natural infection. A difficulty in the manufacture of anti-rinderpest serum was the incidence of trypanosomiasis among the serum makers, the infecting trypanosome being chiefly *T. vivax*. Another difficulty was the possible transmission of red-water infection and to combat this latter a solution of trypan blue was added to the rinderpest blood virus.

The position of rinderpest in Nigeria is more satisfactory than in the past. No outbreaks of any serious magnitude occurred and there were no signs of their flaming up into an epidemic. At the same time, the Director points out the economic advantages of the complete suppression of rinderpest in Nigeria, and indeed in the whole of Africa, but states that more intensive and extensive efforts must be made before Nigeria can be completely freed and such freedom maintained.

Contagious bovine pleuro-pneumonia occurred in five provinces of Nigeria. We find that

prophylactic vaccination against this disease is not on the whole popular with native owners and from the report we gather is only resorted to when outbreaks occur and for the passage of cattle along certain trade routes. Culture vaccine has been used and it is reported that amongst Nigerian cattle it is inadvisable to use cultures higher than the one hundred and sixtieth or lower than the one hundred and thirty-eighth generation. Further, it has been found that there is a variation in the virulence of culture vaccine in the different areas of which no explanation can be given.

Black quarter appears to be well under control and this is due to the large-scale inoculations practised.

Trypanosomiasis occurs in every province of the territory, and *T. vivax* is most frequently the causal agent, but *T. congolense* is sometimes present. Treatment by the intravenous injection of a 4 per cent. solution of tartar emetic gave good results. "Surfen C" was also used against *T. vivax* but the veterinary pathologist considers it of little trypanocidal value in Nigeria, possibly owing to the various samples not being of a single standard. In an appendix on "Trypanosomiasis in the Horse in Nigeria," written by J. A. Griffiths, the Deputy Director, it is stated that there are a sufficient number of recoveries in racing and polo ponies (following injections of tartar emetic) which have worked for years without a relapse to establish the value of this drug in the treatment of *T. vivax* and *T. congolense* infections.

Tuberculosis among cattle is being investigated owing to some 15 per cent. of cattle being found affected at the Calabar abattoir. Foot-and-mouth disease is reported as being more widespread than usual but it has, as usual under African conditions, caused no mortality among adult stock.

In addition to the purely veterinary work the Department has done much to further a hide and skin improvement scheme and a goat improvement scheme and has carried out experiments on fresh milk transport on the railway and clarified butter fat production.

An institute for the training of African technical assistants for use in the Department is an important development for it is intended that they shall eventually take charge of subsidiary veterinary centres where preliminary investigation into outbreaks of disease will be conducted. They would also initiate measures of control and presumably carry out inoculations and the minor operations and so allow the Department to expand on economic lines in accordance with the growing needs of the territory.

The report is extremely interesting; it covers an extensive field and is a record of an efficient veterinary service. Among all its activities it is little wonder that the Department could carry out no veterinary research. Research work on local problems is essential in all States, and in a territory so vast as Nigeria, with its multiplicity of animal disease problems, a whole-time officer devoted entirely to veterinary research is vital both in the interests of the State and the stock owner, European and native alike, and we hope that such an appointment will be made in the near future.

REVIEW

[**Simplified Statistics.** By L. J. Holman. Published by Sir Isaac Pitman and Sons, Ltd., London. Price 3s. 6d. net.]

The author of this little book has undertaken a formidable task and one in which it is probably impossible to achieve full success. In this small work, which is written in a popular style and largely bereft of mathematical treatment, he has endeavoured to impart to the reader who has no previous knowledge of statistics, a working acquaintance with the subject.

The book is readable but is full of unnecessary trivial asides which are apt to take the reader's attention away from the subject in hand and almost persuade him to discontinue. Thus on page 47, after discussing standard deviation, the author proceeds: "Of course, I have cunningly chosen a series which I knew beforehand would give me no trouble at all." The popular style could have been retained and no annoyance caused to the reader if the absurd suggestion of cunning had been omitted. The reviewer could multiply this example many fold with similar attempts to make the subject appear one for the hearth rug. The truth is that statistics must remain a study for concentration and diligent work at the desk.

If the author's task had really been to impart a true knowledge of statistics we should have been forced to say he had failed but if, as he says in the foreword, it is meant as an easy and readable introduction to the subject so that "having reached the end, he (the reader) should find that he knows a considerable amount about the subject and should then experience no difficulty in reading or understanding any further book on statistics that he may take up," then the purpose of the book has been largely justified. Perhaps the author is overstating himself in this sentence, but one can safely conclude that the uninitiated reader who goes through this book will pick up a certain familiarity with the subject, its uses and its methods which will be of considerable value to him when he subsequently turns to more advanced treatises.

N.V.M.A. DIVISIONAL REPORTS

Lincolnshire and District V.M.A.*

PRESIDENT'S ADDRESS AT PETERBOROUGH

A meeting of the above Society was held at the Angel Hotel, Peterborough, on Thursday, June 9th, 1938. The President, Major A. N. Foster, O.B.E., was in the Chair and there were also present Mr. W. W. Lang (Honorary Member), Messrs. J. Hill, T. Hicks, C. Weighton, M. R. MacFarlane, W. K. Townson, A. Williams, T. J. Keall, A. J. James, C. W. Townsend, W. A. Dickinson, G. Lockwood, G. Eaton and T. Knowles (members), J. C. Brown, D. I. MacAllister, G. A. Moore and R. E. Murison (visitors).

The minutes of the last meeting, having been published in the *Veterinary Record*, were taken as read and signed as correct by the President.

Letters of apology for absence were received from Sir Frederick Hobday, Dr. G. B. Brook, Messrs. H. L. Torrance, F. W. Gooch, J. H. Poles and T. Bindloss.

Correspondence

(1) *Various.*—Letters requiring no action were passed round for the inspection of members.

(2) A letter from the organisers of the Adrian Jones Statue Appeal Fund. It was decided to send a further donation of two-and-a-half guineas to the Fund.

(3) Letters with reference to the Thirteenth International Veterinary Congress asking for a contribution to the Funds. It was decided that no contribution be made.

(4) From the Secretary of the National Veterinary Medical Association, dealing with the report of the Poultry Technical Committee with reference to the organisation of the Refresher Course. Major T. Hicks proposed and Mr. M. R. MacFarlane seconded, that in view of the importance of this subject to the younger members of the profession the Secretary be asked to organise a refresher course at a place in the centre of the divisional area, and that all the members of the Association whole-heartedly support the course.

(5) From the Secretary of the National Veterinary Medical Association, dealing with the free treatment of the sick animals of the poor. It was proposed by Major T. Hicks and seconded by Mr. T. Knowles, that the following resolution be sent to the National Veterinary Medical Association:—

"That this Association feels that some scheme is necessary and while agreeing to support any scheme decided upon, also feels that centralised clinics may be ideal in large towns; but there are only very few towns large enough to warrant the setting up of clinics. In the smaller towns and rural areas there would not be enough cases to warrant either a practitioner setting aside certain fixed hours or the attendance of a representative of the R.S.P.C.A. In the view of the Association, the decentralised service would be more efficient and useful if the owner of the animal obtained a card from a representative of the R.S.P.C.A., or a police station, stating that the animal had been recommended by them for free treatment. Such card should give the names and addresses of all veterinary surgeons in the district co-operating in the scheme; also inviting the owner to subscribe whatever he could towards the treatment. It was also agreed that it was advisable for a veterinary surgeon to be appointed a member of the local committee and that considerable publicity should be given in the local Press, etc., to any scheme decided upon."

The President's Address

The President (Major A. M. Foster) delivered his Presidential Address, as follows:—

I am fully appreciative and deeply sensible of the honour you have bestowed upon me by electing me your President for the year. It is a matter for the deepest regret that that great and capable veterinarian, Mr. Richard Hudson, of Retford, could not see his way to take the office. I hope he will always attend our meetings and give us the benefit of his knowledge and experience.

As you are aware, it is only comparatively recently that I have come amongst you as a practitioner in Lincoln City and as a member of this Association—and I therefore thank you for the evidence of the confidence you have in me, after six years' sojourn amongst you.

It is 40 years since I seriously took up veterinary work by being articled as a pupil to the late Mr. Robert Cockburn, Eastwood, Nottinghamshire, and 35 years since I graduated M.R.C.V.S. from the Royal Veterinary College, London: and my professional experience has been varied—general practice, Municipal, Colonial Service, and Territorial Army Service.

I feel that it will be of interest to review briefly some of the achievements of and work done by our profession, to note the undoubted progress made and to visualise the future outlook. Owing to our favourable insular position we in Great Britain have been able to rid our country of certain diseases, some veritable scourges in the animal world, some of them also transmissible to human beings. Cattle plague, more commonly known as rinderpest,

*Received for publication June 18th, 1938.

or by our French friends as *la peste bovine*, was finally stamped out of Great Britain in 1877, and *en passant* we Britishers must pay tribute to our French confrères for the way in which they cleared up an outbreak in Paris soon after the termination of the Great War—1914 to 1918—when the disease was accidentally introduced by a batch of cattle from Russia.

Rinderpest still prevails from time to time, notably in some parts of the African Continent, but it is kept well under control and sufficient is known about the disease to ensure that when veterinary staffs and funds are adequate and properly co-ordinated throughout, this disease will undoubtedly be wiped out of Africa.

Contagious bovine pleuro-pneumonia was finally eradicated from England in the year 1898. In Uganda Protectorate (Africa) this disease was introduced either during or shortly after the termination of the Great War and many centres of the disease existed, but as a result of an intensive campaign against it the Protectorate was cleared in less than ten years.

Glanders, that terrible equine scourge also transmissible to man, which was prevalent, notably in London, until the early part of this century, has been to all intents and purposes eradicated from England. It is worthy of mention that though a few outbreaks occurred amongst our Army horses on the Continent during the Great War, these were quickly cleared and no single case was introduced into Great Britain though thousands of horses were repatriated when hostilities ceased.

Rabies, owing to preventive measures still in force, is no longer a danger. No case has had its origin in this country for many years.

Within our Empire great strides have been and are being made in the preventive and curative treatment of insect-borne diseases such as the trypanosomiases and piroplasmoses. It is distinctly worthy of mention that in the year 1882 the credit for the first microscopical demonstration of a pathogenic trypanosome—to wit, *T. evansi*, the causal protozoon of surra in horses and camels in India—belonged to that great veterinarian Griffith Evans.

Great strides have been made by ascertaining that certain diseased conditions are due to mineral deficiency and faulty endocrine gland function and much remains to be done in biochemistry and endocrinology.

Much progress has been made in operative technique and in the use of anaesthetics. The value of X-ray work and effects of light rays are appreciated and require further elucidation and application.

Our profession is sometimes referred to as the "Cinderella of the Professions," but progress is very evident. We have acquired university status and we still maintain that priceless blessing, the one portal system of qualification.

The Army Veterinary Service was granted better status after the South African War and after the Great War was given the title of Royal Army Veterinary Corps.

The educational period of the veterinary graduate which was extended from three years to four years during the latter part of the last century, has recently been extended to five years. The gates of the profession were opened to women shortly after the War and several of them have joined our ranks.

From time to time supplementary qualifications such as degrees in Veterinary Science and diplomas in State and Tropical Veterinary Medicine have become available for the veterinary graduate; the course for these additional qualifications can for the most part be taken concurrently with that for the membership diploma.

Recently in this country administrative and executive duties under the Diseases of Animals Acts and Orders and the Milk and Dairies Acts and Orders have been transferred from local authorities to the Ministry of Agriculture and Fisheries. Previously many local authorities had already established their own whole-time veterinary staffs for these duties. In this county the local authorities utilised the services of veterinary surgeons practising in the areas concerned until the coming into operation of Part IV, Agriculture Act, 1937. Standardisation and uniformity in the performance and application of these duties has long been called for, but one would have thought that a better plan than establishing large and expensive whole-time staffs would have been to appoint one or two permanent whole-time officials per county or other demarcated region who would utilise the services of the resident veterinary surgeons practising in their particular area. It is to be hoped that the Ministry of Agriculture and Fisheries will follow this plan in the campaign against animal diseases and in the promotion of animal welfare in the future.

Stupendous tasks lie before us—our status and prestige in matters relating to public health need not only safeguarding but vastly improving. Animal husbandry embraces, as well as all stock animals themselves, their products, work, meat, milk and hides. All these matters rightly fall within the province of our professional activities. There is at present tremendous wastage; Iwel plants are needed in many parts of the country. The urge for the proper recognition of our profession by the Ministry of Health in matters relating to public health in which animals and their products are concerned is paramount. Diseases such as tuberculosis

and contagious abortion, to mention two only, are to be tackled with a view to their control and finally their eradication.

That dread scourge foot-and-mouth disease is kept in hand in this country and it is well that it is so, from every standpoint. It remains definitely to discover that as yet unknown factor responsible for the recrudescences.

It is possible that in the future regional veterinary hospitals may be established to meet the needs of districts. Much time is lost on individual farms in treating ineffective animals and the treatment is generally in untrained hands. I feel that the grouping of the sick and injured animals in districts in hospitals would make for efficiency. Such a scheme would need collaboration between representatives of the stock-owning community and of our own profession.

The post of Veterinary Adviser to the Colonial Office unfortunately has been allowed to lapse—this is against the best interests of the dependencies concerned and their contained veterinary services. It is up to these latter veterinary services to show a united front for the appointment to be revived.

Representation of our profession in the Government of the country is badly needed; it is an old cry, but it is up to us to see that we have at least one member of our profession in the House of Commons, while again, agriculture has not got sufficient voice in Parliament.

The horse can and still does hold his position in the economic situation, but he is not getting a "square deal." Except in the case of the racehorse this animal has not sufficient backers! If, unfortunately, this country should be involved in a war of any magnitude I consider that horses will be required for military services, but there is being brought about a situation in which there will be a shortage of horses and what is equally if not more important, a shortage of personnel who understand this animal.

The Docking Bill is, I believe, about to become law. Amputation of the horse's tail is indicated in those intended for harness work, and when properly carried out with the use of a local anaesthetic, is quite a legitimate operation: it is just as legitimate to amputate a horse's tail as it is that of a dog or other animal.

There is much talk of war. Wars are at the moment being waged in Spain and in the Far East. In this country we are feverishly making up for lost time in the maintenance of our fighting forces and equipment at the necessary standard to defend our Empire and traditions in case of attack. We should always be prepared. Air raid precautions are well to the fore: provision is being made in the towns for domesticated pets, even to the manufacture of gas masks for dogs. One hears little, however, of organisation in the rural districts for protection of the larger animals of the farm, where one can visualise enemy aircraft, driven off from industrial centres, getting rid of their gas-bombs in our country ere returning to their own, doing considerable damage and causing much suffering amongst, say, flocks of sheep. I think it is rather up to our profession to outline anti-gas measures, be the gases non-persistent or persistent, when they are inimical to animal life and welfare.

This county of Lincolnshire is one of the most important, if not the most important, in the country from an agricultural point of view and has always had many veterinarians pre-eminent in the practice of their profession.

This Division of the N.V.M.A. has approximately 50 members: the names of many are well-known and respected throughout the profession. You have honoured me by making me your President and we have a most excellent Secretary and Treasurer—the funds of the Division are in a healthy state.

In the multitude of counsels there is wisdom: *Venienti occurrite morbo*: *Vis unita fortior.* We will bear these quotations or mottoes in mind. I will do my level best to serve you and so endeavour to maintain unbroken the reputation of my office made ready for me by those illustrious Past-Presidents of this Division—including the I.P.P. We have met to-day and will meet in the future, that profit and pleasure may result. A visitor has suggested to me that one of our meetings should be purely of a social nature; say a day's outing or a dinner and dance—a meeting at which dry dusty "shop" would be taboo. It would be an innovation so far as this Division is concerned but there are precedents afforded by other Divisions. I think it is an excellent suggestion.

A vote of thanks to the President for his able address was passed with acclamation, on the proposition of Mr. W. W. Lang, seconded by Mr. W. A. Dickinson.

Paper.—The President now called upon Captain O. V. Gunning to read his paper, "A Few Notes on Equine Colic," saying that Captain Gunning needed no introduction from him: he was well known throughout the profession, practising in that stronghold of the Shire horse, the Derbyshire—Staffordshire border which was also the home of the Meynell Hunt. [Captain Gunning's paper and a report of the discussion (opened by Major T. Hicks) which followed its presentation, are published at the commencement of this issue.—*Editor.*]

Nominations for Membership.—The essayist having been cordially thanked for his excellent paper, the meeting received the nominations of the following gentlemen, to come up for ballot at the next meeting: Messrs. G. A. Moore (proposed by Wm. Gibson, seconded by Major T. Hicks); C. P. Inglis (proposed by C. Weighton, seconded by T. J. Keall); R. S. Smyth (proposed by C. Weighton, seconded by T. J. Keall); R. E. Murison (proposed by W. A. Dickinson, seconded by W. W. Lang), and E. Brown (proposed by W. A. Dickinson, seconded by W. W. Lang).

Interesting Cases and Post-mortem Specimens

Mr. Poles reported (in a letter apologising for his absence) a very interesting abnormality in a cow that aborted after a six months pregnancy—a bull-headed calf with only one eye and that four times the normal size and in the centre of the forehead.

Mr. MacFarlane exhibited the lower jaw bone of a steer badly affected by actinomycosis. He also showed the incisor teeth of a horse that had recently been bought as a nine-year-old; the members estimated the age to be 25 to 30 years.

Mr. Weighton showed a small hydatid cyst from the uterus of a heifer, found at the time of calving. In connection with this exhibit, the following are the terms of a report from Dr. J. N. Oldham, Royal Veterinary College, London, dated June 20th, 1938:—

"With reference to your letter of June 14th and the accompanying specimen, I have examined the cyst and consider it to be a *Cysticercus tenuicollis*, the larval stage of *Taenia hydatigena* (or *marginata*) of the dog. I was obliged to open the cyst for diagnostic purposes and there were no signs within of hydatid sand—*i.e.*, brood capsules and scolices, although I admit that sterile hydatid cysts are the rule in cattle. There was, however, an elongate, fusiform object, about one-third of an inch, inside, which appeared to be the invaginated scolex portion, but I could not detect the presence of hooks when the object was cleared in creosote. Apart from this, there were no signs of a head. Your specimen was a thin-walled vesicle unlike the normal hydatid, which is thick-walled and consists of two layers. *C. tenuicollis* is known to occur in cattle, as well as in sheep, etc., and is usually found in the peritoneal cavity, but as it is known to occur in other parts of the body also, the curious situation of your specimen could thus be accounted for."

Next Meeting.—For this meeting, which is to be held in October in Lincoln, Mr. Lang has promised to report on the year's working on his enquiry into foal mortality. Professor W. C. Miller has agreed to come and open the discussion.

At the conclusion of the meeting the members were entertained to tea by the President.

Wm. Gibson, *Hon. Secretary.*

Mid-West Veterinary Association*

MEETING AT BATH

A general meeting of the Mid-West Division of the N.V.M.A. was held at the Francis Hotel, Bath, on Friday, April 29th, 1938. Mr. H. S. Robinson (President) was in the Chair and the following members were present: Messrs. J. S. Garside, W. R. Watson, G. G. McLaren, H. C. Wilkins, S. V. Golledge, W. A. Austin, J. C. Coleman, S. H. Pettifer, A. E. Gachet, D. W. Menzies, C. J. Pugh, W. Tweed, M. Baird, C. R. Golledge, T. J. Margarson, A. A. Abbott, G. D. Coward and J. Fox. Visitors, Messrs. J. Ellis, R. Tindle and J. A. Matheson.

Apologies for absence were received from Sir Frederick Hobday, J. W. Hall Masheter, J. R. Baxter, A. J. Baxter and Captain Howard Jones.

Election of Representatives on the Council of the N.V.M.A.—The following were elected: Mr. H. S. Robinson (President) and Mr. J. R. Hewer, with the Secretary (*ex officio*).

Resolution.—The following resolution, proposed by Mr. Coleman and seconded by Dr. Scott was confirmed, namely, "That the N.V.M.A. be asked to have analysed proprietary animal remedies for which extravagant or unreasonable claims are made by the manufacturers."

New Members.—The following were elected members of the Division: Captain J. Fox, Taunton; Mr. G. G. McLaren, Gloucester; Mr. G. D. Coward, Bristol, and Captain A. A. Abbott, Burnham.

Correspondence.—(1) From the N.V.M.A., on the report of the Poultry Technical Committee. After discussion it was left to the Council to consider and report.

(2) From the N.V.M.A., in reference to free treatment of sick animals of the poor. After discussion, this was left to the Council to consider.

Paper.—Mr. Esmond Brown, of the Ministry of Agriculture, then read his paper on "Foot-and-Mouth Disease." The discussion was opened by Mr. W. Tweed of the Ministry of Agriculture, and a general discussion followed. [This paper is reproduced, with a report of the discussion, earlier in this issue.—*Editor.*]

A vote of thanks was proposed by the President to Mr. Brown for his instructive paper. This was seconded by the Secretary and carried with acclamation.

The members then adjourned for tea.

Charles E. Perry, *Hon. Secretary.*

*Received for publication June 22nd, 1938.

Notes and News

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Aug. 21st-25th.—Thirteenth International Veterinary Congress, Zürich.

Aug. 26th-27th.—Thirteenth International Veterinary Congress, Interlaken.

Sept. 5th-9th.—Annual Congress, N.V.M.A., at Glasgow.

Sept. 8th.—Annual Dinner of the Royal (Dick) Veterinary College Alumnus Association at the Ca'dora Hotel, Glasgow, 6.30 p.m.

Sept. 19th.—Meeting of the Editorial Committee, N.V.M.A., at 36, Gordon Square, W.C.1, 4 p.m.

Sept. 20th.—Applications due for Miss Aleen Cust Veterinary Research Scholarship.
R.C.V.S. Examination Committee Special Meeting.

Oct. 5th.—R.C.V.S. Committee Meetings.

Oct. 6th.—R.C.V.S. Committee Meetings.

Oct. 7th.—R.C.V.S. Committee and Council Meetings.

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CONGRESS NOTES

Her Majesty Queen Mary

It was recently announced that Her Majesty Queen Mary would pay an informal visit to the Empire Exhibition on Monday, September 5th, and again on Friday, September 9th.

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Admission to the Empire Exhibition

As announced in the Congress Handbook, the Hon. Local Secretary will have two offices—one at the Central Station Hotel and the other in the Concert Hall of the Empire Exhibition. Members attending the Congress should obtain their ticket of admission to the Empire Exhibition from the Hon. Local Secretary's office at the Central Station Hotel. Tickets so obtained will not only cover the whole period of the Congress, but will enable members to effect a considerable saving on the daily charge of admission. Those who arrive at the Exhibition without such a ticket will be required to pay the ordinary entrance fee.

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The Cruise

A special steamer has been chartered for the cruise on Thursday, September 8th. It would be a great help in making the final arrangements if members who intend to go on this cruise—and it is hoped everyone attending the Congress will do so—would give early notice to the Hon. Local Secretary.

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PERSONAL

RETIREMENT OF DR. GEORGE HILTON

Guardian of the Health of Canadian Livestock

We learn that Dr. George Hilton, V.S., HON. ASSOCIATE R.C.V.S., D.V.M., Veterinary Director General, Department of Agriculture, Canada, is about to retire on superannuation after 33 years' distinguished service. His retirement becomes effective at the conclusion of six months' retiring leave.

Dr. Hilton, who is internationally known as an outstanding veterinarian, was born at Verkator, Russia, of English parentage. He was educated in England and at Grosvenor House Private School, Luton, Bedfordshire, won special honour certificates in Organic and Inorganic Chemistry. He went to Canada with his parents in 1888 and settled at Headingly, Manitoba, where he farmed for a few years before he entered the Ontario Veterinary College, Toronto, from which he graduated with honours in 1897. Following his graduation he engaged in general practice at Portage la Prairie, Manitoba. While there he was elected as Alderman of the Portage la Prairie City Council and Director of the Lakeside Agricultural Association.

In May, 1905, he was appointed Chief Veterinary Inspector, Health of Animals Branch, Dominion Department of Agriculture, with headquarters in Ottawa. He continued in that position until 1924 when he was promoted to succeed the late Dr. Fred Torrance, as Veterinary Director General.

Dr. Hilton was the Canadian representative on the Executive Board of the American Veterinary Medical Association for fourteen years and occupied the position of Chairman of that Board. He is a member of the United States Live Stock Sanitary Association, the Canadian and American Public Health Associations, honorary member of the Manitoba, Saskatchewan and Alberta Veterinary Associations, and Honorary President of the Central Canada Veterinary Association. He was the official Canadian representative to the Eleventh International Veterinary Congress held in London, in 1930 and was elected honorary associate of the Royal Veterinary College. He is a member of the Permanent Committee of the International Veterinary Congress and represented Canada at Geneva in 1935 on a Special Sub-Committee of the Economic Committee of the League of Nations, dealing with inter-

national shipments of meats and meat food products.

In recognition of his long and distinguished services in the realm of veterinary science the honorary degree of D.V.M. (Doctor of Veterinary Medicine) was conferred on him by the University of Montreal in 1936.

The Department of Agriculture, Canada, in making the announcement of Dr. Hilton's retirement, observes, it is really superfluous to say, that he leaves with the fullest measure of esteem and respect of all his co-workers and associates in the Dominion Department of Agriculture, who bespeak for him many years of ease and enjoyment so well earned and so rightly deserved.

Dr. A. E. Cameron, Chief Veterinary Inspector, will be acting as Veterinary Director General until a successor to Dr. Hilton is definitely appointed.

In the course of a notable tribute to Dr. Hilton's great service in the cause of the preservation of the health of the livestock of the Dominion, the *Ottawa Journal* states: "When a man comes to the age of retirement, that period in his life when he feels he should step aside to spend his remaining years in greater ease and comfort, it is satisfying if he can look back upon a career of useful and distinguished service. This Dr. George Hilton, of Ottawa, may do with complete confidence.

"It is not a coincidence nor just luck that there has never been an outbreak of foot-and-mouth disease in Canada, a disease that is the most infectious and costly among farm animals except horses, one that has caused some of the countries of Europe many millions of dollars and that has on occasions proved expensive and troublesome in the United States. This enviable record is explained by the exacting vigilance and prevention demanded by successive Veterinary Directors General and by none more so than Dr. Hilton. He has maintained, often against strong opposition, an inflexible determination in the safeguarding of the Canadian livestock industry, one of the largest and most important of the Dominion. Neither is it a coincidence nor luck that dourine, a breeding disease among horses, has been absent from Canada for 18 years and that not a case of sheep scab has been reported in ten years.

"When Dr. Hilton became V.D.G. the work of eradication of bovine tuberculosis had just been started. Since then more than 3,000,000 cattle in the Dominion have been placed under the supervision of the Department. In the meantime accredited areas have been established and extended. The work in connection with the control of Bang's disease, hog cholera, glanders, mange, rabies and other diseases among animals has been efficiently and effectively developed; so too have the services of meat and canned foods inspection been maintained and their efficiency increased.

"Dr. Hilton's contribution to the public welfare has been national in its scope and of outstanding importance. The leadership he has given in the ceaseless war on animal diseases is typical of much excellent work done in the Government service of which little is known by the general public."

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We are glad, for our part, to take this opportunity of publishing the following tribute to Dr. George Hilton recently received from one who has an intimate personal knowledge of the man and his work:—

The annual reports of Dr. Hilton were always read with much interest in every country by those in charge of the health of animals, providing evidence of progressive practical veterinary science as applied to the prevention and eradication of diseases in animals. Under his administration Dr. Watson and his co-workers have carried out some very important work, especially with regard to tuberculosis and the use of B C G vaccine.

I have had the honour and pleasure of visiting nearly every country in the world in connection with the breeding, transportation and slaughter of animals, also the preparation of the carcases and by-products for human food and can testify to the very efficient manner in which this work is carried out in Canada, thus ensuring that Canadian products are free from disease and can be consumed with every confidence as to their purity.

The great work of Dr. Hilton was not always performed under pleasant circumstances; he had difficulties to contend with which would have appalled and disheartened many a man but his determination to carry out the duties allotted to him, without fear or favour, has been rewarded by the esteem in which he is held by his Government, his staff and the owners of animals through the Dominion.

Quiet and unassuming, but absolutely firm in his decisions, Dr. Hilton is one whom the veterinary profession throughout the world can well be proud. I have had the honour of knowing him officially for many years and latterly of acting under his administration. Under such circumstances one can fully judge the character and ability of a leader, and the longer I have known Dr. Hilton the more I have admired him professionally and socially.

T. D. Young.

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Birth.—Buckler. On August 10th, 1938, at 34, London Road, Stevenage, to Kathleen Beatrice, wife of G. K. Buckler, M.R.C.V.S., a son.

Colonial Veterinary Service.—The appointments are announced of Mr. M. H. C. Glynn, M.R.C.V.S., as Veterinary Officer, Northern Rhodesia, and of Mr. W. G. G. Pevie, M.R.C.V.S., as Veterinary Officer, Tanganyika Territory.

Messrs. E. T. Fern, H. A. Hay-Barclay and J. McDonald, MM.R.C.V.S., have arrived in this country on leave from Northern Rhodesia, Nigeria and the Gold Coast, respectively.

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R.C.V.S. OBITUARY

Beattie, John, Rose Cottage, Longside, Aberdeenshire. Graduated Edinburgh, April 18th, 1883. Died August 8th, 1938; aged 68 years.

Jack, David Samson, Town Place, King's Lynn, Norfolk. Graduated Glasgow, May 21st, 1898. Died August 8th, 1938; aged 63 years.

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Mr. John Beattie, M.R.C.V.S.

Mr. John Beattie, who was a notable and familiar figure in Buchan, Aberdeenshire, after graduating at Edinburgh returned to his birthplace at Longside and followed the practice of his father, the late Mr. George Beattie, M.R.C.V.S. From that date to his death, Mr. Beattie had practised exclusively in the Longside and Buchan districts.

In the early days he made his visits on horseback, later obtaining a gig and he was the first man in the village to own a car.

Mr. Beattie, who is survived by his wife and a son, had been in failing health for some time, but continued his practice to within a short time of his death.

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Mr. David S. Jack, M.R.C.V.S.

Mr. Jack, a native of Helensburgh, Dunbarton, after graduating at Glasgow was for a short time in practice in Brechin. Thirty years ago he went to King's Lynn where he built up an extensive practice in the West Norfolk district, earning for himself a reputation as an able practitioner and a sound judge of cattle and horses.

He was Honorary Secretary to numerous shows and societies, including the annual Royal Norfolk Show.

The attendance at the funeral was representative of a wide section of the agricultural community of East Anglia and of fellow members of the profession, including Professor J. McCunn, of the Royal Veterinary College, London (with Mrs. McCunn), Captain W. K. Townson, Peterborough, representing the Council of the Royal College of Veterinary Surgeons, London (with Mrs. Townson), and Mr. W. H. Dennett, Fakenham, President of the Eastern Counties Veterinary Medical Association.

Among the innumerable floral tributes was a wreath from the Eastern Counties' Division, N.V.M.A.

Mr. Jack is survived by a widow, two daughters and three sons, the eldest of whom is with the Veterinary Department of the Anglo-Egyptian Government in the Sudan.

Professor McCunn writes of Mr. Jack: "I had known him for many years. He was a dour Scotsman who did not waste words and did not confer his friendship lightly, but when once his natural reserve had been broken down he was a charming companion and a loyal friend. He never courted the limelight and his profession was both his work and hobby.

"Only those who knew him well realised what a wealth of kindness and generosity lay behind this man of reserve. Only during the last sad week and from no less a person than his bank manager have I had further proof of this.

"Jack was an able veterinarian. His passing is a loss to his profession and especially so to his clientele, rich and poor, in the district where he made his home for 30 odd years."

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FIRST IMPERIAL VETERINARY CONFERENCE

Animal Health in the Empire

The first Imperial Veterinary Conference was opened on Monday last at the Royal Veterinary College, Camden Town, by Mr. F. L. McDougall, the representative of Australia on the Executive Council of the Imperial Agricultural Bureaux.

The conference was organised by that Council to afford an opportunity to the leading veterinary research and administrative officers in the several countries of the Empire to consider in detail the work and working of the Imperial Bureau of Animal Health and to exchange information and experience regarding important diseases, progress in their study and the measures taken to combat them. The Bureau, which was started in 1929, is supported by all Governments of the Empire and is organised to act as a clearing house of scientific information on research in veterinary science.

In opening the Conference, Mr. McDougall emphasised the importance of animal husbandry to agriculture in the whole of the British Commonwealth. He estimated that to-day it contributed about 65 per cent. of the total wealth produced on all the agricultural land of the Empire. In the United Kingdom animal products represented about 70 per cent. of the value of products sold off farms; in Australia and South Africa the proportion was nearly the same; and in New Zealand and Eire it probably approached 80 per cent. In Canada the preponderance of wheat in the Western Provinces probably reduced the figure to about 50 per cent.; and for India and the Colonial Empire the proportion was probably lower.

The report of the League of Nations' Nutrition Committee, he said, indicated that rising standards of living involved a static or even a regressive human consumption for grains and sugar—the basic energy foods—and an increased demand for milk, other dairy products, eggs and meat, and fruit and vegetables. To meet that increasing demand for animal products at the lowest cost compatible with a reasonable return on the capital and labour involved, the farmer needed all the aid that science could give him, whether in animal management and nutrition or improvements in pastures.

Disease was one of the factors greatly increasing the cost of production. He therefore hoped that the conference would discuss the work of the Bureau with frank constructive criticism so as to increase its usefulness. With the demands which were being made and were likely to be made on veterinary science in the near future it was essential that those working on the subject had at their service an efficient organisation

for the collection, marshalling and dissemination of information.

The conference was attended by about 60 delegates and members. The opening session was devoted to a preliminary discussion on the report of the Bureau. Among others who took part in that discussion were Dr. E. A. Watson (Canada), Sir Patrick Laidlaw, Professor F. C. Minett, Dr. P. J. du Toit (South Africa), Mr. Max Henry (Australia), Dr. C. S. M. Hopkirk (New Zealand), and Sir Arthur Olver (India).

Items in the agenda include discussions on foot-and-mouth disease and certain other virus diseases, Johne's disease, bovine mastitis, caseous lymphadenitis of sheep, sheep blowflies, fowl paralysis and chronic bovine haematuria.

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MISS ALEEN CUST VETERINARY RESEARCH SCHOLARSHIP

The first award of this scholarship will be made by the Council of the R.C.V.S. at its meeting early in October.

It will be recalled that Miss Aleen Cust was the first woman to qualify as a Member of the Royal College of Veterinary Surgeons. She left in her will the sum of £5,000 for the purpose of founding a scholarship in Veterinary Research, the candidates for which should be Members or Fellows of the R.C.V.S. and either English, Scottish, Welsh or Irish men or women. The scholarship is to be used to enable the scholar to prosecute original research in a branch of Veterinary Science, and the Council in making the award is authorised, if there are candidates who are in their opinion of equal merit, to give preference to a woman applicant.

The Council in making the award will take into account the result of the examinations for the Diploma of M.R.C.V.S. and any confidential report made upon the candidate by the Principal of the School at which he or she attended.

The value of the scholarship is £160, but it has been decided that the scholar selected shall be awarded the Jubilee Memorial Scholarship Prize for the year, and the combined value of the scholarship and prize will be approximately £200.

Applications must be sent in to the Secretary of the R.C.V.S. not later than September 20th on forms to be obtained from the Secretary's Office at 10, Red Lion Square, London, W.C.1.

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UNIVERSITY OF LONDON EXAMINATIONS IN VETERINARY SCIENCE

Following is further information to that given in our issue of August 13th, relative to the July pass list for the examinations in Veterinary Science conducted by the University of London:

B.Sc. (Veterinary Science): Francis, John, and Sellers, Kenneth Charles (both of the Royal Veterinary College); *Part II.*—Lee, John Arthur, and Roach, Robert Weller, both of the Royal Veterinary College.

Second Examination in Veterinary Science: *Part II.*—Kyaw, Maung Hla; Salmon, Stella Margery and Ticehurst, Robert Edward, all of the Royal Veterinary College.

AGRICULTURAL RESEARCH SCHOLARSHIPS AND STUDENTSHIPS

On the recommendation of the Agricultural Research Council the following awards of agricultural research scholarships, studentships for research in animal health, and veterinary scholarships have been made by the Ministry of Agriculture and Fisheries and the Department of Agriculture for Scotland:—

R. E. Taylor, B.Sc., Ph.D., of King's College, Newcastle-upon-Tyne—a three-year research scholarship in plant pathology, the first year to be spent at Cambridge.

I. F. Storey, B.Sc., of Victoria University, Manchester, and the Imperial College of Science and Technology—a one-year research scholarship in plant pathology at the Imperial College.

D. C. Thomas, B.Sc., of the Imperial College of Science and Technology—a two-year research scholarship in entomology, the first year to be spent at Cambridge.

G. W. Cooke, B.Sc., of University College, Nottingham—a three-year research scholarship in soil chemistry, the first year to be spent at the Rothamsted Experimental Station.

M. R. F. Ashworth, B.Sc., of Oriel College, Oxford—a one-year research scholarship in soil chemistry at the Macaulay Institute for Soil Research.

D. J. Finney, B.A., of Clare College, Cambridge—a two-year research scholarship in agricultural statistics, the first year to be spent at University College, London.

A. N. Worden, M.R.C.V.S., of the Royal Veterinary College, Camden Town—a three-year studentship in animal health, the first period to be spent at the Lister Institute.

J. A. Campbell, B.A., of Downing College, Cambridge—a four-year veterinary scholarship at the Royal Veterinary College, Camden Town.

J. L. McGirr, B.Sc., of Glasgow University—a four-year veterinary scholarship at the Royal Veterinary College, Camden Town.

The object of these research scholarships and studentships is to train research workers in agricultural science and the science of animal health, and, in the case of the veterinary scholarships, to enable graduates with honours in science to obtain a veterinary professional qualification, with a view to undertaking research in animal health. This year for the first time two veterinary scholarships have been awarded.

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ARMY VETERINARY SERVICE

On Tuesday last the *London Gazette* announced appointments and rewards in recognition of services in connection with the operations in Waziristan during the period September 16th to December 15th, 1937. Amongst the awards for which The King has been pleased to give orders and of which he has approved, is that of the O.B.E. (Military Division)—for Valuable Services—to Major Gordon Frank Steevenson, of the Royal Army Veterinary Corps.

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London Gazette—War Office—Regular Army

Aug. 9th.—Maj. R. G. C. Thwaytes retires on an Indian pension (Aug. 10th).

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VETERINARY SURGERY AS A CAREER

On Tuesday last the Ministry of Labour issued a new edition of the pamphlet on veterinary surgery which is one of the series compiled by arrangement with the Incorporated Associations of Headmasters and Headmistresses of public and secondary schools. The pamphlet sets out in detail the qualifications needed for the profession, the methods and cost of training (with references to the scholarships available), and the prospects in independent practice, research work, and in official appointments both at home and in the Dominions and Colonies. The pamphlet may be purchased from the Stationery Office, price 3d.

ANTHRAX FROM ARTIFICIAL MANURE

"At the inquest on June 4th on a market gardener of 30 who died of anthrax in Manchester Royal Infirmary, the jury returned a verdict of death by misadventure, adding a rider that death had been caused by handling artificial manure. The man bought manure from a local manufacturer and scattered some of it on his land with his bare hands. A few days before his death he complained to his wife of severe headaches and she noticed a pimple on his neck. Later his neck swelled and the swelling spread to his chest and, in spite of treatment in hospital, he died of anthrax septicaemia. The doctor who gave evidence said that the man might have become infected by scratching his neck while spreading the manure, and asked whether anthrax bacilli would not be destroyed in the preparation of manure, pointing out that they were very resistant to heat. Evidence was given that horses, cattle, and occasionally sheep, are used to make manure, diseased animals being examined by veterinary surgeons. A representative of the makers of the manure stated that this was made from horses which they slaughtered themselves and the hides and hair were not used. The horses were old and sometimes diseased, and any animal which died suddenly was examined by a veterinary surgeon for anthrax. He agreed that it was possible for an animal to go through the manufacturer's hands without examination."—*The Lancet* (June 18th).

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VIRUS IMMUNITY

"Some 40 years ago Béclère, Chambon, and Ménard[1] passively immunised heifers against vaccinia virus by the injection of serum from immunised animals and gave the first convincing proof that antibodies played a part in the mechanism of immunity to a virus," reads a *British Medical Journal* "leader," appearing on April 30th, 1938. "And although from time to time since then attempts have been made to minimise or deny the importance of antibodies in virus immunity, the great mass of evidence collected since the experiment of Béclère and his colleagues has stressed the importance of the humoral factor. In the case of specific resistance to bacterial infection we have a fairly clear idea of the way antibodies help to ensure the immune state. Neutralisation of soluble toxins, the preparation of the bacteria for phagocytosis and intracellular destruction, or more rarely for extracellular lysis, are some of the functions of bacterial antisera which are recognised and have been extensively studied. What part does antibody play in preventing infection by a virus? In order to understand this it is necessary to bear in mind certain differences that exist between this class of infecting agent and bacteria. Apart from their smaller size viruses differ from bacteria in their cultural requirements; they are unable to multiply apart from living cells and appear to be highly specialised intracellular parasites. Some might object to the use of the term 'parasite' in connection with viruses, particularly in view of the recent work of Stanley in America and Bawden and Pirie in this country, which demonstrates to the satisfaction of most workers that some plant viruses are heavy proteins which can be obtained in a paracrystalline form. But both plant and animal viruses behave in many essential way like living things, and, as Burnet, Keogh and Lush[2] point out in their recent monograph on the immunity reactions of viruses, they can be most usefully considered as minute, organised, living micro-organisms—at all events so far as the problems of immunity are concerned.

"There is as yet no evidence that viruses elaborate soluble toxins, as do some bacteria, so that any antitoxic action on the part of anti-viral sera does not come into the picture. Does the antiserum prepare the virus for phagocytosis and intracellular destruction, or does it so change the virus that it cannot enter the susceptible cells or multiply if it gets inside them? Béclère and his collaborators[3] expressed themselves in doubt as to whether the specific antibody had a direct virucidal action or whether it altered the tissue cells, rendering them resistant to infection: quite recently Sabin[4] has supported the latter contention. There is no reason to suppose that the protective antibody has any direct virucidal action, and, as Bedson[5] has pointed out, there is as yet no convincing evidence that virus is sensitised for destruction by phagocytes or by complement. Burnet and his colleagues are satisfied, as others before them, that union between virus and protective antibody does take place, but all are agreed that this union is readily reversible, although prolonged contact may lead to its becoming firmer. In the light of our present knowledge—or lack of it—one can suppose, as Burnet and his colleagues do, that as the result of this union with antibody the virus is hindered from entering susceptible cells or from multiplying should it succeed in reaching that intracellular environment essential to its growth.

"So far as the reactions of the viruses and their antisera *in vitro* are concerned there is ample evidence that these differ in no fundamental way from what has been found in the case of bacteria or any other antigen-antibody system. Apparent differences, as Merrill[6] has shown, are due to the small size of viruses. With such minute things a much greater number is required than in the case of bacteria to obtain that concentration of antigen necessary for the demonstration of precipitation, agglutination, or complement fixation. But given that concentration, these immunological reactions are available for work with viruses, and, as in the case of bacteria, they can be used either in the identification of viruses or in the diagnosis of disease. In connection with their employment for the latter purpose, however, there is one point to bear in mind: the search for antibody in the blood of the infected individual is likely to be a more fruitful line of investigation than an attempt to demonstrate virus in his tissue by serological means. It is true that Burgess, Craigie, and Tulloch[7] have demonstrated the value of a precipitin test in the diagnosis of small-pox, in which the known factor was a vaccinial antiserum and the unknown a suspension of the crusts from the suspected case, and more recently Craigie and Wishart[8] have applied

[1] *Ann. Inst. Pasteur*, 1898, **12**, 837.

[2] *Supplement, Austral. J. exp. Biol. med. Sci.*, 1937, Sept., vol. 15.

[3] *Ann. Inst. Pasteur*, 1899, **13**, 81.

[4] *Brit. J. exp. Path*, 1935, **16**, 70.

[5] *Proc. roy. Soc. Med.*, 1937, **31**, 59.

[6] *J. Immunol.*, 1936, **30**, 169.

[7] *Med. Res. Counc. Spec. Rep. Ser.*, 1929, London, No. 143.

[8] *Canad. publ. Hlth. J.*, 1936, **27**, 371.

the complement-fixation test to the same end. But generally speaking the concentration of virus in virulent material from a case of virus disease will fall below the critical level necessary for its demonstration by a serological test *in vitro*, whereas with a known virus suspension of adequate concentration the search for antibody in the patient's serum should present no great difficulty."

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

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PATHOGENIC ORGANISMS AND FOWL PARALYSIS

To the Editor of the Veterinary Record

Sir,—With reference to Mr. Ernest Gray's paper "Pathogenic Organisms and Fowl Paralysis," may I invite his replies to the following questions:—

(1) What wild birds has he found suffering from true fowl paralysis?

(2) What is his evidence that waste protein products are thrown back into the duodenum to be associated with innumerable petechiae in nephritis in fowls?

(3) Concerning the pathogenic bacteria which he has recovered *post-mortem* from affected nerves is he quite satisfied that these can be recovered from affected birds killed and examined whilst still warm? (In my experience these organisms occur *post-mortem* and are not obtained from quite fresh specimens.)

(4) What are the common errors he has found in relation to the wrongful feeding of poultry associated with intestinal parasitism and fowl paralysis?

Yours faithfully,
W. P. Blount.

The Pantiles,
Corsica Road,
Seaford, Sussex.
August 15th, 1938.

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"AN EXPLANATION"

To the Editor of the Veterinary Record

Sir,—With reference to the letter published in your issue August 6th, 1938, entitled "An Explanation," in our opinion an explanation in the *Veterinary Record* is inadequate to the occasion.

This unwarranted use of the title "Veterinary Surgeon" applied to unregistered persons should surely be explained rather to the general public than to the veterinary profession. Would it not be possible to approach *The Sphere* in order that they may correct the wrong impression which has been given, no doubt innocently, to their readers?

We are,
Yours faithfully,
W. J. B. Watson.
J. B. Edwards.

183, Upper Richmond Road,
Putney, S.W.15.
August 12th, 1938.

DISEASES OF ANIMALS ACTS, 1894 TO 1937, AND AGRICULTURE ACT OF 1937 (PART IV)

SUMMARY OF RETURNS

Period.	Anthrax.		Foot-and-Mouth Disease.		Parasitic§ Mange.		Sheep Scab.	Swine Fever.	
	Outbreaks confirmed.	Animals attacked.	Outbreaks confirmed.	Animals slaughtered as diseased or exposed to infection.	Outbreaks reported by the Local Authorities.	Animals attacked.	Outbreaks confirmed.	Outbreaks confirmed.	Swine slaughtered.
	No.	No.	No.	No.	No.	No.	No.	No.	No.
Period 16th to 31st July, 1938	24	26	2	319	—	—	1	42	17
Corresponding period in									
1937	26	42	6	400	1	1	1	26	16
1936	17	22	—	—	6	8	2	84	78
1935	6	9	—	—	2	2	8	96	66
Total 1st January to 31st July, 1938	535	592	157	20,258	42	70	105	377	238
Corresponding period in									
1937	457	556	15	3,646	87	124	131	688	497
1936	288	341	4	379	80	221	147	1,232	894
1935	225	260	34	10,208	79	164	206	1,182	682

Note.—The figures for the current year are approximate only.

§ Excluding outbreaks in Army Horses.